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Cleveland

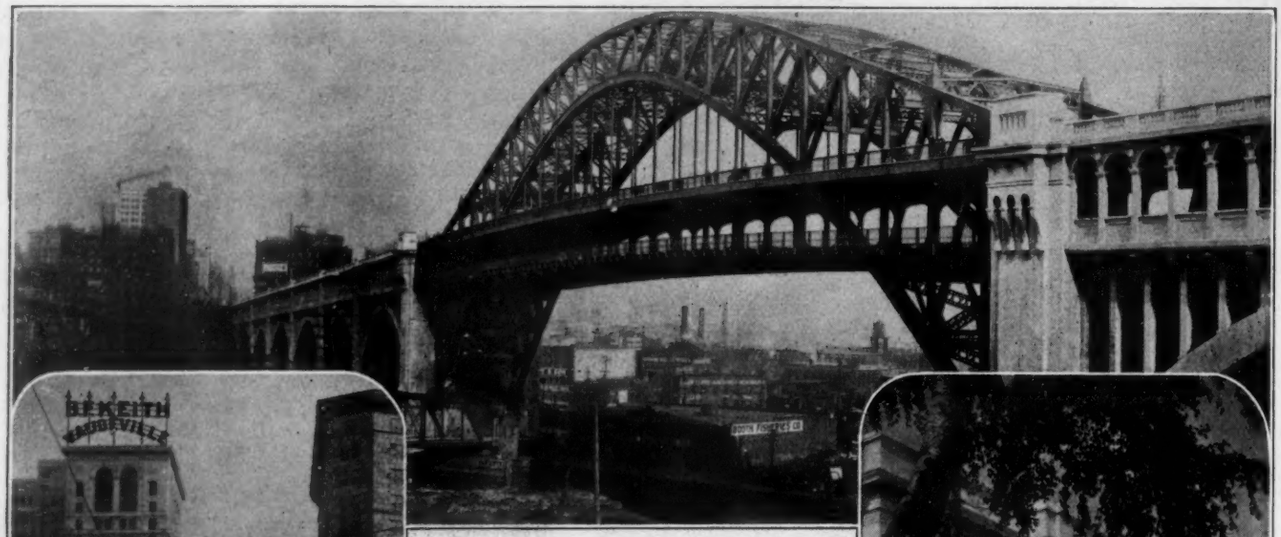
Airplane view of Cleveland business district

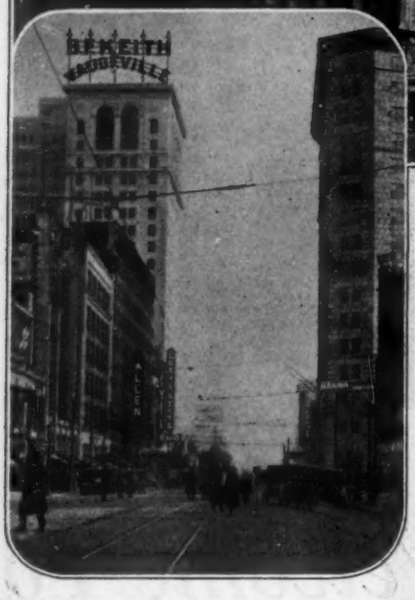
Cleveland Extends Welcome To Steel Treaters

IN HOLDING its seventh annual convention and exposition in Cleveland, the American Society for Steel Treating not only focuses attention to its rapid progress during the few years of its existence but also links itself more intimately with the iron and steel industry of this country. Conceived by a small group of men drawn together by a common interest to seek further knowledge as to structural changes of metals due to heat, the organization has expanded to a membership of over 3500 and has interested itself in all metallurgical operations from the raw material to the finished product. With an object so broad as this it is particularly appropriate that Cleveland should be selected as the 1925 convention city, for here is located a wide range of iron and steel manufacturing operations and a diversified field of finished products. As an iron and steel manufacturing center, the Cleveland district is exceeded only by the Pittsburgh, Chicago and Youngstown areas. The city of Cleveland alone has a normal annual consumption of steel of something like 1,000,000 tons. Within its boundaries is produced more wire than in any one locality in the United States. In the district are 21 blast furnaces with an annual capacity of 3,500,000 gross tons, 12 steelworks producing about 5,000,000 tons annually and a large variety of mills rolling every finished product, excepting only standard rails and standard structural shapes. Cleveland is the largest iron ore center of the country. Finished products made in the city are so diversified that heat treating operations are

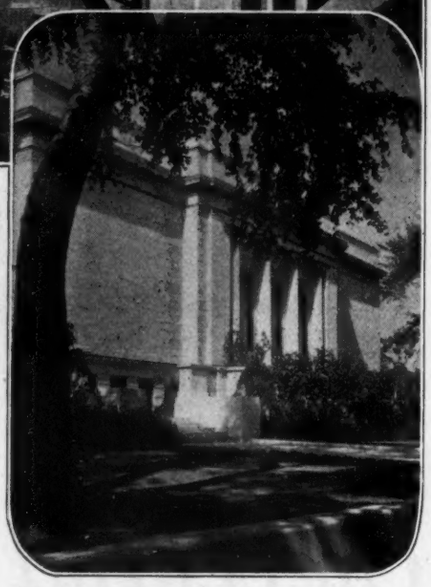
EXPOSITION SHOWS STEADY GROWTH

Exposition	Year	Place	Attendance	Floor Space Sq. Ft.
First	1919	Chicago	6,000	6,500
Second	1920	Philadelphia	10,000	9,000
Third	1921	Indianapolis	10,000	12,000
Fourth	1922	Detroit	20,000	20,000
Fifth	1923	Pittsburgh	55,000	30,000
Sixth	1924	Boston	43,000	39.500
Seventh	1925	Cleveland	.....	45,000





Looking east in Euclid avenue toward Playhouse Square. Principal theaters are located in this area



Entrance to Cleveland Art Museum. Wade Park. Above is the High Level Bridge over the Cuyahoga valley

Condensed Program

Monday, Sept. 14

10:15 a. m.—Technical session, Cleveland hotel.
1:00 p. m.—Registration, Public Auditorium.
1:00 p. m.-10:00 p. m.—Exposition open.
1:30 p. m.—Organ recital, Auditorium.
2:00 p. m.—Technical session, Hollenden hotel.
7:00 p. m.—Organ recital, Auditorium.

Tuesday, Sept. 15.

9:30 a. m.—Steel melting session, Cleveland hotel.
12:30 p. m.—Metallurgical education symposium luncheon, Cleveland hotel.
1:00 p. m.-10:00 p. m.—Exposition open.
1:30 p. m.—Organ recital, Auditorium.
1:30 p. m.—Plant visitation. Midland Steel Products Co. or National Carbon Co.
2:00 p. m.—Technical session, Hollenden hotel.
6:00 p. m.—Dinner meeting, committee E-4, A. S. T. M., Old Colony club, Hollenden hotel.
7:00 p. m.—Organ recital, Auditorium.
9:30 p. m.—Smoker and entertainment, Grays' armory.

Wednesday, Sept. 16

9:30 a. m.—Annual business meeting and technical session, Cleveland hotel.
1:00 p. m.-10:00 p. m.—Exposition open.
1:30 p. m.—Organ recital, Auditorium.
1:30 p. m.—Plant visitation. White Motor Car Co. or Van Dorn & Dutton Co.
1:30 p. m.—Organ recital, Auditorium.
2:00 p. m.—Technical session, Hollenden hotel.
9:30 p. m.—Annual dance, Cleveland hotel.

Thursday, Sept. 17

9:30 a. m.—Technical session, Cleveland hotel.
1:00 p. m.-5:30 p. m.—Exposition open.
1:30 p. m.—Organ recital, Auditorium.
2:00 p. m.—Machine shop session, Hollenden hotel.
2:00 p. m.—Hardness testing symposium, Hollenden hotel.
6:30 p. m.—Annual banquet, Cleveland hotel.

Friday, Sept. 18

9:30 a. m.—Technical session, Cleveland hotel.
1:00 p. m.-10:00 p. m.—Exposition open.
1:30 p. m.—Organ recital, Auditorium.
1:30 p. m.—Plant visitation. Glidden Co. or American Steel & Wire Co., Cuyahoga plant.
2:00 p. m.—Technical session, Hollenden hotel.
7:00 p. m.—Organ recital, Auditorium.

varied and cover a wide range.

An unusually complete program has been prepared for the convention including a number of valuable technical papers. Those attending technical sessions should benefit from discussion from the floor since about three-fourths of the papers to be presented are available in preprint form. The Cleveland convention initiates this plan. Indicative of the society's recent-born interest in raw materials is the steel melting session which has been scheduled for Tuesday morning. The meeting will be opened with a paper showing what proportion of the country's annual steel production receives heat treatment in some form or other and will be followed by three papers discussing acid open-hearth, basic open-hearth and electric steel, respectively.

A more complete program has been arranged for the hardness testing symposium which is to be held on Tuesday afternoon under the direction of the society's hardness testing committee. Six good papers have been arranged for this period. For those not interested in hardness testing, another session has been arranged under the direction of the machine shop practice division of the American Society of Mechanical Engineers. Modern surface grinding and dies will be discussed in papers. At past conventions, the metallurgical education symposium has been arranged as an afternoon session, but this year it will take the form of a luncheon on Tuesday noon.

According to the arrangements that have been made, all morning sessions will be held in the ball room of the Cleveland hotel, while all afternoon sessions will be in the ball room of the Hollenden hotel. Sessions of the Society of Automotive Engineers, which is holding production meetings on Monday, Tuesday and Wednesday of the same week, will be held at the Hotel Winton.

The exposition, which is by far the largest arranged by the society, will be conducted in Cleveland Public Auditorium, the finest exhibition hall in the country. Booths will be located on the arena or main floor, on the stage and

in the basement and will make a total of 45,000 square feet. This is 5500 square feet in excess of that used at Boston last year, but several months ago the available space was sold out and half a hundred applicants turned down. Due to the splendid facilities of the lower floor of the auditorium in providing gas, electric power, water and sewer accommodations, the greater part of the operating exhibits will be located here.

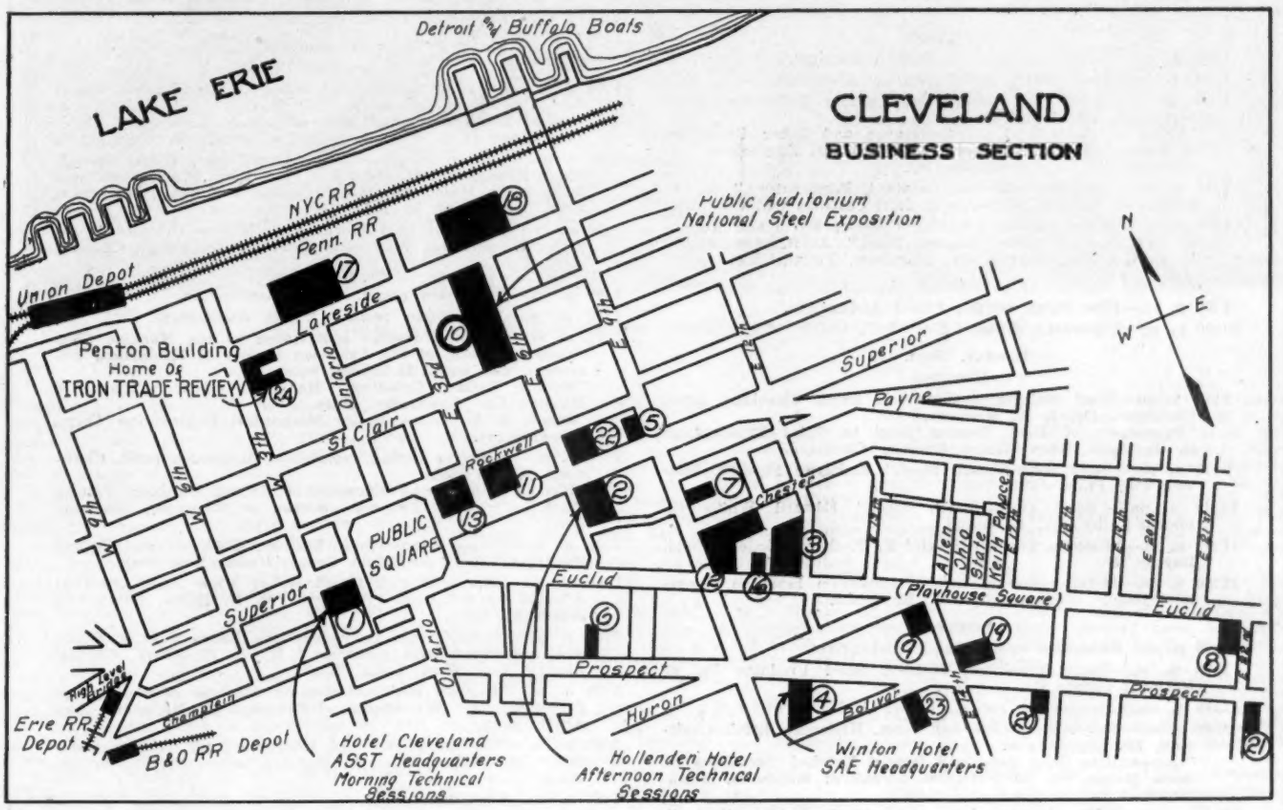
Exhibitors at the Cleveland convention will total about 180 and about three-fourths of these will have part

p. m. and close at 10 p. m. On Thursday it will open at 1 p. m. but will close at 5:30 p. m. on account of the annual banquet. One of the features of the exposition will be the pipe organ recitals which are to be given every day at 1:30 p.m., 4 p.m. and 7 p.m. by Vincent H. Percy. The pipe organ in the auditorium has 10,010 pipes and 150 direct speaking stops and is said to be one of the largest and finest in the world. Its cost was $100,000. Two 30 and one 10-horsepower motors are required to operate it. The organ console con-

on Thursday evening the annual banquet will be served at the Cleveland hotel. The entertainment committee also is arranging a golf tournament for those interested.

Several plant inspections have been arranged for the week. These will include visits to the Midland Steel Products Co., National Carbon Co., White Motor Co., Van Dorn & Dutton Co., Glidden Co., and American Steel & Wire Co., Cuyahoga Works.

Convention committee members are as follows: General chairman, J. B. Dillard, Cleveland Twist Drill Co.,



Principal points of interest to members of American Society for Steel Treating

1. Cleveland Hotel
2. Hollenden Hotel
3. Statler Hotel
4. Winton Hotel
5. Olmsted Hotel
6. Colonial Hotel
7. Murphy's Hotel
8. New Amsterdam Hotel
9. Euclid Hotel
10. Public Auditorium.
11. New Public Library
12. Union Trust Building
13. Postoffice
16. Stillman Theater
17. County Court House
18. City Hall
19. Hanna Theater
20. Y. W. C. A.
21. Y. M. C. A.
22. Gray's Armory
23. Penton Building—Home of IRON TRADE REVIEW.

or all of their equipment in operation, affording visitors the opportunity of seeing apparatus performing under conditions as near normal as possible. During recent years, expositions of the society have been notable for their machine tool and machinery displays and the Cleveland show is even more notable. This year the proportion of space devoted to these exhibits is considerably greater than last year. The basement floor will be devoted almost exclusively to machine tool and furnace displays.

With the exception of Thursday, the exposition will open daily at 1

taining five manuals is mounted on an electric elevator in front of the stage to permit its being lowered out of sight when occasion requires. The pipes and chambers are located on the right stage wings and are invisible from the arena. The echo organ is at the extreme north end of arena.

Entertainment features of the convention have not been overlooked by the committee. On Tuesday evening, the annual smoker and entertainment will be held in Gray's Armory. On Wednesday evening the annual ball is to be held at the Cleveland hotel and

H. A. Schwartz, National Malleable & Steel Castings Co.; A. S. Townsend, Cleveland Twist Drill Co.; W. S. Bidle, W. S. Bidle Co.; meetings and papers, E. C. Smith, Central Steel Co.; finance, W. C. Bell, Case Hardening Service Co.; ladies' entertainment, H. M. Boylston, Case School of Applied Science; men's entertainment, W. F. Abel; information, J. V. Emmons, Cleveland Twist Drill Co.; transportation, A. H. Frauenthal, Chandler Motor Co.; hotels, W. H. White, Atlas Alloy Steel Corp.; and plant inspection, G. J. Allen, Heppenstall Forge & Knife Co.

Complete Program and Technical Papers of Convention

Monday, Sept. 14

MORNING

10:00 a. m.—Meeting in ball room, Cleveland hotel.
Welcome by Cleveland chapter, H. A. Schwartz, chairman.
Address of welcome, Col. J. B. Dillard, general convention chairman.
Response, President W. S. Bidle.

10:15 a. m.—Technical session, ball room, Cleveland hotel. Chairman, H. A. Schwartz.
"Interpretation of Notched Bar Impact Test Results," Paul Heymans, Massachusetts Institute of Technology, Cambridge, Mass.

10:50 a. m.—"Chemical Composition of Tool Steels," J. P. Gill, Vanadium Alloys Steel Co., Latrobe, Pa.

11:25 a. m.—"Experiments with Nickel, Tantalum, Cobalt and Molybdenum in High Speed Steels," H. J. French, bureau of standards, Washington.

AFTERNOON

1:00 p. m.—Exposition opens, Public Auditorium.

1:30 p. m.—Pipe organ recital, Public Auditorium.

2:00 p. m.—Technical session, ball room, Hollenden hotel. Chairman, Dr. A. E. White.
"Effect of Cold Work on Endurance and Other Properties of Metals," D. J. McAdam Jr., U. S. Naval Engineering experiment station,, Annapolis, Md.

2:40 p. m.—"Graphitization at Constant Temperature," H. A. Schwartz, National Malleable & Steel Castings Co., Cleveland.

3:20 p. m.—"Some Factors Affecting Coercive Force and Residual Induction of Some Magnet Steel," J. R. Adams and F. E. Goeckler, Midvale Co., Nicetown, Philadelphia.

EVENING

7:00 p. m.—Pipe organ recital, Public Auditorium.

10:00 p. m.—Exposition closes.

Tuesday, Sept. 15

MORNING

9:30 a. m.—Steel melting session, ball room, Cleveland hotel. Chairman, Dr. J. A. Mathews.
"Proportion of Heat Treated Steel to Total Production," C. J. Stark, IRON TRADE REVIEW, Cleveland.

9:50 a. m.—"Acid Open-Hearth Steel," Radclyffe Furness, Midvale Co., Philadelphia.

10:30 a. m.—"Basic Open-Hearth Steel," Edward Whitworth, Bourne-Fuller Co., Cleveland.

11:15 a. m.—"Electric Furnace Steel," F. T. Sisco, McCook Field, Dayton, O.

12:30 p. m.—Metallurgical education symposium luncheon, Cleveland hotel. Chairman, Dr. A. E. White.

AFTERNOON

1:00 p. m.—Exposition opens, Public Auditorium.

1:30 p. m.—Plant inspection, Midland Steel Products Co. or National Carbon Co.

1:30 p. m.—Pipe organ recital, Public Auditorium.

2:00 p. m.—Technical session, ball room, Hollenden hotel. Chairman, Dr. Zay Jeffries.
"Comparative Slow Bend and Impact Notched Bar Tests on Some Metals," S. N. Petrenko, bureau of standards, Washington.

2:40 p. m.—"Effect of Reheating on Cold Drawn Bars," S. C. Spalding, Halcomb Steel Co., Syracuse, N. Y.

3:20 p. m.—"Application of the Mathematics of Probability to Experimental Data as a Basis for Appropriate Choice of Ferrous Materials," B. D. Saklatwalla and H. T. Chandler, Vanadium Corp. of America, Bridgeville, Pa.

EVENING

6:00 p. m.—Dinner meeting of committee E-4, A. S. T. M. Old Colony club, Hollenden hotel.

7:00 p. m.—Pipe organ recital, Public Auditorium.

9:30 p. m.—Annual smoker and entertainment, Gray's Armory.

10:00 p. m.—Exposition closes.

Wednesday, Sept. 16

MORNING

9:30 a. m.—Annual business meeting, ball room, Cleveland hotel. Chairman, W. S. Bidle.
Report of chapter delegates.
Report of officers.

10:30 a. m.—Technical session, ball room, Cleveland hotel. Chairman, Dr. G. K. Burgess.
"Retained Austenite—A Contribution to the Metallurgy of Magnetism," Dr. John A. Mathews, Crucible Steel Co. of America, New York.

11:15 a. m.—"On Martensite," Dr. H. Hanemann, Technischen Hochschule, Charlottenburg, Germany. To be presented by Dr. S. L. Hoyt.

AFTERNOON

1:00 p. m.—Exposition opens, Public Auditorium.

1:30 p. m.—Plant inspection, White Motor Car Co. or Van Dorn & Dutton Co.

1:30 p. m.—Pipe organ recital, Public Auditorium.

2:00 p. m.—Technical session, ball room, Hollenden hotel. Chairman, E. C. Bain.
"The Carbon Content of Pearlite in Iron-Carbon Alloys Containing 1 Per Cent Silicon," Anson Hayes, Iowa State college, Ames, Iowa.

2:30 p. m.—"Irregular Carburization—Its Causes and Preventions," W. J. Merten, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

3:00 p. m.—"A Study of Dendritic Structure and Crystal Formation," Bradley Stoughton and F. J. G. Duck, Lehigh university, Bethlehem, Pa.

3:30 p. m.—"Oil Burning Equipment for Industrial Furnaces," W. H. Mawhinney, General Furnace Co., Pittsburgh.

EVENING

7:00 p. m.—Pipe organ recital, Public Auditorium.

9:30 p. m.—Annual dance, ball room, Cleveland hotel.

10:00 p. m.—Exposition closes.

Thursday, Sept. 17

MORNING

9:30 a. m.—Technical session, ball room, Cleveland hotel. Chairman, Dr. Albert Sauveur.
"Initial Temperature and Mass Effects in Quenching," H. J. French and O. Z. Klopsch, bureau of standards, Washington.

10:20 a. m.—"On the Nature of Some Low Tungsten Tool Steels," M. A. Grossmann, United Alloy Steel Corp., Canton, O., and E. C. Bain, Union Carbide & Carbon Research laboratories, Long Island City, N. Y.

11:10 a. m.—"Effect of Cold Working on Hollow Cylinders," Dr. F. C. Langenberg, Watertown Arsenal, Watertown, Mass.

AFTERNOON

1:00 p. m.—Exposition opens, Public Auditorium.

1:30 p. m.—Pipe organ recital, Public Auditorium.

2:00 p. m.—Technical session contributed by the Machine Shop Practice division of the American Society of Mechanical Engineers, ball room, Hollenden hotel.
"Modern Surface Grinding," Henry K. Spencer, Blanchard Machine Co., Cambridge, Mass.
"Dies," S. A. Keller, Keller Mechanical Engineering Corp., Brooklyn, N. Y.

2:00 p. m.—Hardness testing symposium, Hollenden hotel. Chairman, A. E. Bellis.
"Electric Ring for Verification of Brinell Hardness Testing Machines," S. N. Petrenko, bureau of standards, Washington.

2:20 p. m.—"Some Comparisons Between Rockwell and Brinell Hardness," R. C. Brumfield, Cooper Union, New York.

2:40 p. m.—"Hardness and Toughness of High Speed Steel as Affected by the Heat Treatment," R. K. Barry, Barry Co., Muscatine, Iowa.

3:00 p. m.—"Stress-Strain Curve and the Characteristics Which Are Associated with Hardness," H. P. Hollnagel, General Electric Co., West Lynn, Mass.

3:20 p. m.—"English Hardness Testing Machine of the Brinell Principle," O. W. Boston, University of Michigan, Ann Arbor, Mich.

3:40 p. m.—"The Durometer—An Instrument for Testing Hardness," Dr. Albert Sauveur, Harvard university, Cambridge, Mass.

5:30 p. m.—Exposition closes.

EVENING

6:30 p. m. Annual banquet, ball room, Cleveland hotel.

Friday, Sept. 18

MORNING

9:30 a. m.—Technical session, ball room, Cleveland hotel. Chairman, Bradley Stoughton.
"Carburization by Solid Cements," W. E. Day Jr., International Motor Co., New Brunswick, N. J.

10:20 a. m.—"Dilatometric Method of Heat Treatment," O. E. Harder, R. L. Dowdell and A. C. Forsythe, University of Minnesota, Minneapolis.

11:10 a. m.—"What Happens When Metal Fails by Fatigue," Prof. H. F. Moore, University of Illinois, Urbana, Ill.

AFTERNOON

1:00 p. m.—Exposition opens, Public Auditorium.

1:30 p. m.—Plant inspection, Glidden Co. or the American Steel & Wire Co., Cuyahoga plant.

1:30 p. m.—Pipe organ recital, Public Auditorium.

2:00 p. m.—Technical session, ball room, Hollenden hotel. Chairman, H. M. Boylston.
"Why Cast Iron and Steel Cracks and Warps," John F. Keller, Purdue university, Lafayette, Ind.

2:40 p. m.—"Design and Operation of Furnaces for Salt Baths," Sam Tour, Doehler Die Castings Co., Batavia, N. Y.

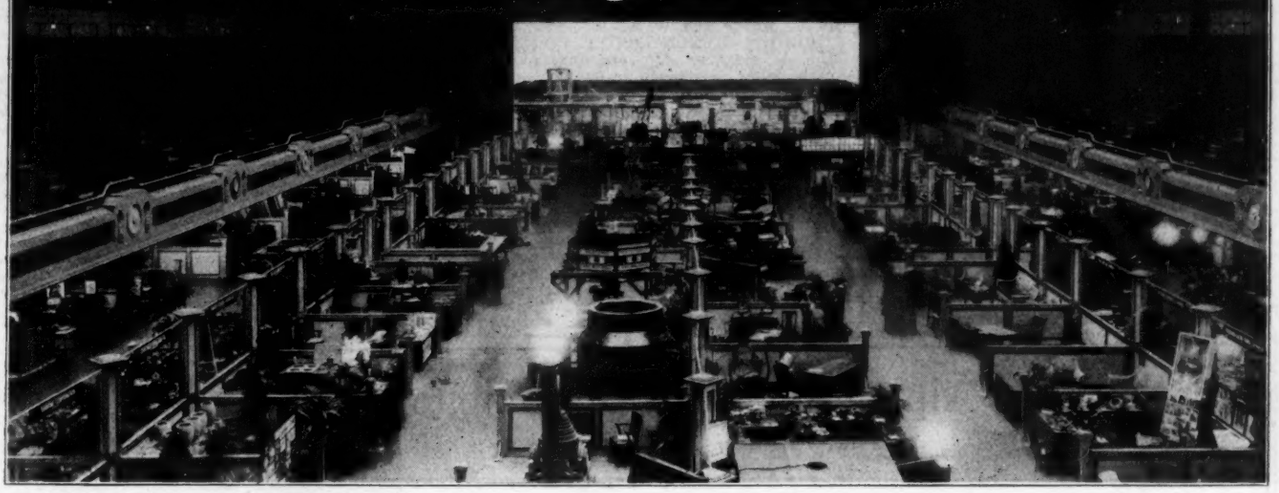
3:20 p. m.—"Welding Steel Tubing and Sheet with Chromium Molybdenum Welding Wire," F. T. Sisco and H. W. Boulton, McCook Field, Dayton, O.

EVENING

7:00 p. m.—Pipe organ recital, Public Auditorium.

10:00 p. m.—Exposition closes.

Exhibits Will Show Progress in Treating of Steel



Main floor of Public Auditorium during an industrial exposition

ABRASIVE MACHINE TOOL CO., East Providence, R. I.—In operation will be shown horizontal and vertical spindle surface grinders. K. B. MacLeod and N. D. MacLeod will be in charge of the display.

ACME MACHINE TOOL CO., Cincinnati—A full universal turret lathe will be operated under the direction of C. Meier and Mr. Stehn.

AIR REDUCTION SALES CO., New York—This company will display oxygen, acetylene and heating gases in cylinders; welding and cutting torches, regulators and supplies; oxygen discharge manifold; and other devices used in oxyacetylene machine cutting. The display will be handled by G. F. Weiser, W. F. Cooper, J. H. Gjerdum and C. E. Hobbs.

AJAX MFG. CO., Cleveland—An upsetting forging machine, a board drop hammer, and specimens of upset forgings will be displayed by this company, whose representatives will be J. R. Blakeslee, H. D. Heman, A. L. Guilford, Gordon Fristoe and W. W. Criley.

ALLEN, CHARLES G., CO., Barre, Mass.—This company will have an operating exhibit of 4-spindle ball bearing power feed drilling machines, featuring different types of heads. Harding Allen and Charles G. Allen will be in attendance.

AMERICAN GAS FURNACE CO., Elizabeth, N. J.—This exhibit will be composed of a gas carbonizing machine; salt bath furnaces for preheating and drawing; a high speed steel oven furnace; burners and blowpipes, and an automatic temperature controller. In charge of the exhibit: P. C. Osterman, W. H. Kelsey, John Mehrman, Theodore Farwick Sr. and Gustav Schwab.

AMERICAN RESISTOR CO., Philadelphia—On display by this company will be nonmetallic electric heating elements in operation at 1600 to 3000 degrees Fahr. in high speed steel heat treating and forging furnaces and in laboratory and assay furnaces. Representatives will be Joseph A. Steinmetz, W. W. Perkins, W. E. Duersten, B. G. Tarkington, Oscar Brophy, H. N. Shaw and K. E. Rogers.

AMERICAN STAINLESS STEEL CO., Pittsburgh—A complete line of stainless steel and iron products will be shown, under the direction of John C. Neale and Charles S. Bunting.

AMERICAN TOOL WORKS, Cincinnati—A 14-inch x 6-foot motor-driven lathe; a 24-inch motor-driven shaper; a 24-inch x 12-foot heavy pattern motor-driven lathe; a 5-inch triple purpose radial drill motor-driven; a 3-inch high speed sensitive radial drill motor driven; and a 3-inch gear box belt-driven radial drill will be operated by this company. J. C. Hussey will be in charge.

AMES, B. C., & CO., Waltham, Mass.—A cabinet mounted bench lathe, a bench milling machine and a triplex lathe will be shown in operation at this booth. Warren Ames will direct the exhibit.

ANCHOR DRAWN STEEL CO., Latrobe, Pa.—At this booth will be displayed high speed and carbon drill rods; high speed, carbon and alloy steel cold drawn threading chasers; cold drawn taps in high speed, tungsten and alloy steels; specimens of cold drawn stainless steels, and high speed, tool, alloy and carbon steels in various shapes. Representing the company will be D. R. Wilson, G. W. Morrison, W. W. Noble and Felix Kremp.

ARMSTRONG-BLUM MFG. CO., Chicago—This company will display in operation an automatic high speed saw; a metal band saw; hack sawing machines; and a punch, shear and bender under supervision of Harry J. Blum.

ARMSTRONG CORK & INSULATION CO., Pittsburgh—Cork and cork specialties, high pressure insulating covering and insulating brick will be shown by this company. J. T. Gower, P. W. Adams, N. P. Waite and James A. Wilson will be in charge.

ATKINS, E. C., & CO., Indianapolis—This exhibit will consist of alloy steel hack saw blades, quick cut sawing machines, and a metal band saw machine. Those in attendance will be Edward S. Norvell, H. L. Pruner, A. Mertz, W. R. Chapin and William Appel.

ATLAS ALLOY STEEL CORP., Dunkirk, N. Y.—High speed, carbon and alloy tool steels in various forms will be exhibited by A. F. Dohn, F. B. Lounsberry, C. P. Burgess, Walter Bould, W. H. Wills, D. G. Hoyt, W. H. White, J. S. Marlowe and J. E. Jones.

Exposition Hours

Monday, Sept. 14 1:00 *p. m. to* 10:00 *p. m.*

Tuesday, Sept. 15 1:00 *p. m. to* 10:00 *p. m.*

Wednesday, Sept. 16 1:00 *p. m. to* 10:00 *p. m.*

Thursday, Sept. 17 1:00 *p. m. to* 5:30 *p. m.*

Friday, Sept. 18 1:00 *p. m. to* 10:00 *p. m.*

AVEY DRILLING MACHINE CO., Cincinnati—Among the machine tools shown in operation will be spindle sensitive drills with automatic feed and tapping unit; single spindle automatic with motor on spindle; single spindle high speed hand feed with new type motor mounting; and 2-spindle drill with automatic feed and tapping head. Representing the company will be J. G. Hey, J. Mirrielees, Mr. Hazeldine and L. B. Patterson.

BADGER TOOL CO., Beloit, Wis.—This company will exhibit in operation a double wheel surface grinder and a belt-driven disk grinder with power operated lever feed table Directing the display will be E. B. Gardner and John Nielsen.

BAKER BROS., Toledo, O.—In operation at this display will be cam feed and heavy duty drills, and a two-way horizontal boring and drilling machine in charge of H. Tigges, William Baker, W. W. Elliott and George E. Hallenbeck.

BATH, JOHN & CO. INC., Worcester, Mass.—This company will show ground thread tools including taps, hobs, roll thread dies, plug thread gages and chasers; and internal micrometers. Representatives attending will be John Bath and J. Chester Bath.

BAUSCH & LOMB OPTICAL CO., Rochester, N. Y.—This booth will contain new features in metallographic equipment, including a contour measuring projector and optical devices for shop use. In attendance will be W. L. Patterson, I. L. Nixon, H. L. Shippy, F. C. Lau and L. V. Foster.

BELLEVUE INDUSTRIAL FURNACE CO., Detroit—This company's exhibit will consist of a high speed furnace in cross-section, high temperature fire brick, and oil and gas burners. The display will be under the direction of Walter E. Hinz and L. J. Raymo.

BELLIS HEAT TREATING CO., Branford, Conn.—Heating mediums for hardening and tempering, and pots and furnaces utilizing this medium will be shown by this company. Representatives will be A. E. Bellis, W. E. Hitchcock and G. C. Davis.

BETHLEHEM STEEL CO., Bethlehem, Pa.—The display of this company will consist of alloy and tool steels; miscellaneous merchant mill products and special sections; castings made from mixtures of special pig iron; drop forgings and small press forgings. Representatives will be H. G. Walton, D. A. Barkley, R. MacDonald, C. E. Chamberlain, F. W. Baldwin, T. J. Fitzgibbons, R. S. Tucker, W. C. Cutler, J. C. Chandler, P. Kreulin, A. D. Smith, A. P. Spooner, Robert Shimer, Walter Trumbauer, H. Wysor, A. D. Shankland and G. A. Richardson.

BILTON MACHINE TOOL CO., Bridgeport, Conn.—A special type milling machine will

be shown in operation at this company's exhibit, which will be directed by E. A. Harper.

BLACK & DECKER MFG. CO., Towson, Md.—This company will exhibit a complete line of portable electric drills, bench and post drill stands, portable and bench electric grinders, electric twist drill grinders, portable electric tappers, screw drivers and socket wrenches. The tools will be shown in operation. Representatives will be S. D. Black, R. W. Procter, W. C. Allen, R. D. Black, G. M. Buchanan, R. E. Mizener, C. M. Hall, T. C. Cornell and W. J. Fenwick.

BLANCHARD MACHINE CO., Cambridge, Mass.—This company will show in operation an automatic surface grinder with automatic sizing device and washing attachment. H. F. Skillings and C. L. Jones will handle the display.

BRISTOL CO., Waterbury, Conn.—Exhibited in operation will be pyrometers and temperature controllers for heat treating furnaces, including indicating and recording pyrometers, single record, duplex and six-point multiple models, and controlling pyrometers with automatic control valve. Representing the company will be H. L. Griggs, C. W. Bristol, R. M. Walker, H. W. Moss, L. G. Bean, C. C. Eagle, H. G. Hall and H. E. Bean.

BROWN & SHARPE MFG. CO., Providence, R. I.—A hobbing machine, a high speed automatic screw machine, an automatic milling machine, and small tools and cutters will be displayed in operation by this company. The exhibit will be under the direction of J. G. Swinburne, J. H. Skelton and W. Spencer.

BROWN INSTRUMENT CO., Philadelphia—This company will present a line of recording pyrometers, indicating pyrometer automatically controlling furnace temperature at two points; portable potentiometer incorporating 96-inch scale; duplex CO_2 and temperature recording meter for checking combustion efficiency in large furnaces; new types of motor operated control valves, for oil and air, gas and air, or for furnace dampers; thermocouples and other temperature indicating, recording and control equipment. Those attending will be R. P. Brown, G. W. Keller, C. L. Simon, M. M. Watkins, R. W. Mayer, G. L. Clapper, D. C. Mayne and W. E. Woodrow.

BROWN LYNCH SCOTT CO., Monmouth, Ill.—A machine for cleaning and grading carburizing compound will be operated at the booth of this company. J. A. Scott and W. B. Lynch will be in attendance.

BULLARD MACHINE TOOL CO., Bridgeport, Conn.—This display will consist of a 42-inch vertical turret lathe under direction of James Welch.

BUREAU OF STANDARDS, Washington—An exhibit of research and testing work illustrated by photographs and special equipment will indicate the fields of co-operation of the bureau with various industries, particularly iron and steel. Current or recently completed investigations will be considered. Soil corrosion test samples, special rivet steels, tarnish resistant silver alloys, and new optical extensometer will be displayed. In charge of the exhibit will be H. J. French, O. Z. Klopsch, T. C. Digges and H. S. Rawdon.

CAMPBELL, A. C., INC., Bridgeport, Conn.—Belt and motor-driven nibbling machines will be shown in operation at the booth of this company. Representatives will be Stuart Naramore and J. Johnson.

CARBORUNDUM CO., Perth Amboy, N. J.—This company will display gas-fired furnaces in operation to illustrate the difference in thermal conductivities of various refractory tile, and to show applications of special materials for heat treating; also special tiles, bricks and high temperature cements. J. A. King, C. A. Dutton, R. S. Baker and S. A. Fenno will be in charge.

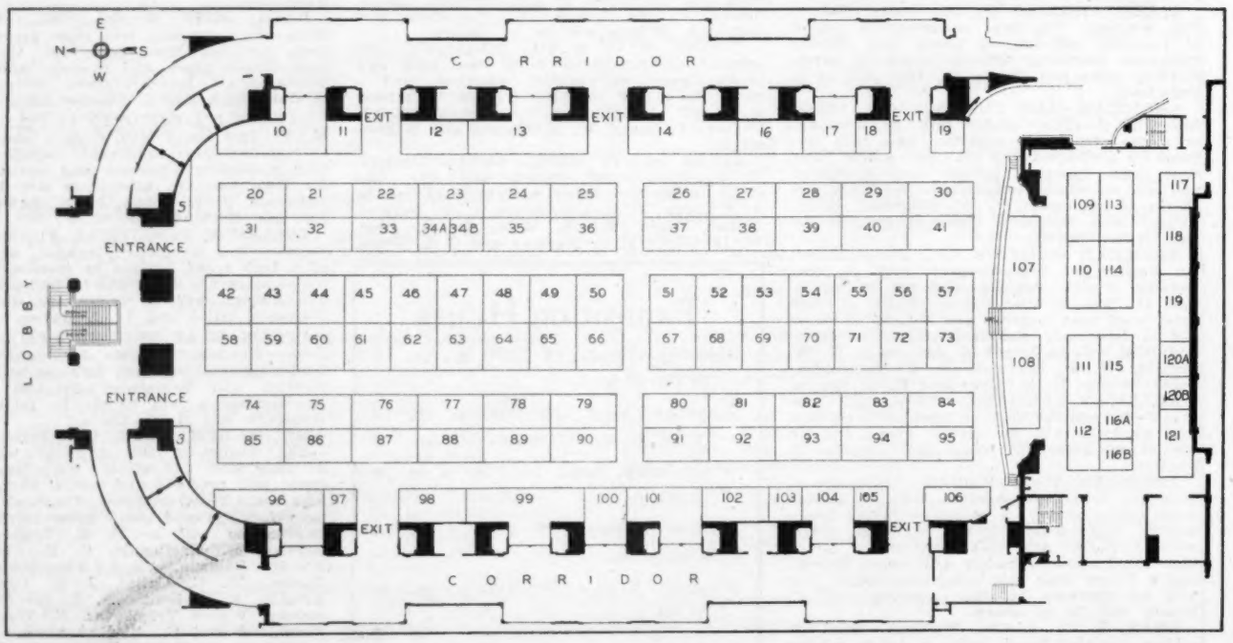
CARPENTER STEEL CO., Reading, Pa.—This exhibit will consist of tools made from special oil hardening tool steel and will be under the direction of F. A. Bigelow, J. H. Parker, C. A. Heil, J. N. Clarke, F. W. Curtis, F. G. Davis, V. W. Gardner, F. R. Palmer, W. H. Kemper and H. J. Joyce Jr.

CASE HARDENING SERVICE CO., Cleveland—Included in this exhibit will be charcoal, bone and cyanide carbonizing compounds; anti-carbonizing paint; lead bath covering; drawing salts; hardening salts; heat resisting metal; carbonizing boxes; lead and cyanide pots; high temperature furnace cements, and other hardening room supplies. In attendance will be W. C. Bell, E. J. Gossett, and James S. Ayling.

CELITE PRODUCTS CO., San Francisco—

Alphabetical List of Exhibitors Who Will Display

Exhibitor	Space No.
Abrasive Machine Tool Co.	246
Acme Machine Tool Co.	250
Air Reduction Sales Co.	271 and 281
Ajax Mfg. Co.	3
Allen, Charles G., Co.	213
American Gas Furnace Co.	220, 221 and 222
American Resistor Co	116 A
American Stainless Steel Co.	81
American Tool Works	224 and 225
Ames, B. C.	210
Anchor Drawn Steel Co.	84
Andresen, F. C., & Associates	11
Armstrong-Blum Mfg. Co.	45
Armstrong Cork & Insulation Co.	57
Atkins, E. C., & Co. Inc.	100
Atlas Alloy Steel Corp.	118
Avey Drilling Machine Co.	253
Badger Machine Tool Co.	258
Baker Bros.	246
Bath, John, & Co.	47
Bausch & Lomb Optical Co.	24
Bellevue Industrial Furnace Co.	121
Bellis Heat Treating Co.	117
Bethlehem Steel Co.	20, 21, 31 and 32
Billings & Spencer Co.	288
Bilton Machine Tool Co.	217
Black & Decker Mfg. Co.	46
Blanchard Machine Co.	256
Bristol Co.	33
Brown Instrument Co.	65 and 66
Brown & Sharpe Mfg. Co.	234 and 235
Brown Lynch Scott Co.	120 A
Bullard Machine Co.	253
Bureau of Standards	113
Campbell, A. C., Co.	232
Carborundum Co.	17
Carpenter Steel Co.	48
Case Hardening Service Co.	41
Celite Products Co.	102
Central Steel Co.	51, 52, 67 and 68
Cincinnati Bickford Machine Co.	257
Cincinnati Grinder Co.	255
Cincinnati Milling Machine Co.	255
Cincinnati Planer Co.	252 and 261
Cincinnati Shaper Co.	217
Cleveland Automatic Machine Co.	233
Cleveland Tool & Supply Co.	121 B
Cleveland Twist Drill Co.	269, 270, 280
Colonial Steel Co.	26 and 37
Crucible Steel Co. of America	74, 75 and 76
Daily Metal Trade	40
Davenport Machine Tool Co.	250
Davison, N. C., Gas Burner & Welder Co.	216
Dearborn Chemical Co.	63
Disston, Henry, & Sons Inc.	22
Donner Steel Co.	93
Driver-Harris Co.	95
Electric Furnace Co.	116 B
Electrical Refractories Co.	120 B
Electro Alloys Co.	114 A
Englehard, Charles, Inc.	53
Ex-Cell-O Tool & Mfg. Co.	287
Firth-Sterling Steel Co.	14 and 15
Ford, J. B., Co.	56
Forging-Stamping-Heat Treating	34 A
Ganschow, William, Co.	62
Gardner Tap & Die Co.	18
Gathmann Engineering Co.	107
General Alloys Co.	42 and 58
General Electric Co.	99
Geometric Tool Co.	233
Giddings & Lewis Machine Co.	245
Gisholt Machine Co.	223 A
Goddard & Goddard Co.	223
Goss & De Leeuw Machine Co.	266 B
Gould & Eberhard Inc.	247
Gray, G. A., Co.	237
Hagan, Geo. J., Co.	13
Halcomb Steel Co.	85 and 86
Hammond Mfg. Co.	212
Hanson-Whitney Machine Co.	282
Heald Machine Co.	267 and 268
Heim Grinder Co.	215
Heppenstall Forge & Knife Co.	106
Hevi-Duty Electric Co.	23



This company will display in use insulating brick, powder and cements, high temperature cement, and waterproofing compound for brick surfaces, under the supervision of M. L. Jenkins.

CENTRAL STEEL CO., Massillon, O.—This will be a general exhibit of special steel products, conducted by F. J. Griffiths, B. F. Farless, J. M. Schlendorf, W. M. Garrigues, D. B. Carson, G. F. Hess, F. L. Gibbons, Arthur Schaeffer, T. B. Davies, E. C. Smith, C. P. Richter, William Leffler, A. J. Wilson, M. M. Clark and R. K. Bowden.

CINCINNATI BICKFORD TOOL CO., Cincinnati—A 4-foot radial drill, a 20-inch high speed drill, and a new type 21-inch direct-drive drill will be operated at this booth. Representatives will be N. C. Schauer, R. M. Husband and S. K. Walker.

CINCINNATI MILLING MACHINE CO., Cincinnati—This exhibit of machines in operation will include a new design of 8-inch saddle-type grinder, high power milling machines with pyramid column and taper roller bearings, an automatic centerless grinder, and a 24-inch duplex grinder. Representatives will be Walter Tangeman, J. E. Caster, L. V. Johnson and Walter Stegner.

CINCINNATI PLANER CO., Cincinnati—A new type 36-inch x 36-inch x 8-foot planer with reversing motor drive will be operated to demonstrate the advantages of rapid traverse, dial feeds, and variable speeds. B. B. Quillen, George Langen, Carl Linden, George Lamoth and Tom Addison will be in attendance.

CINCINNATI SHAPER CO., Cincinnati—At this booth a 24-inch heavy shaper arranged for motor drive with a 10-horsepower motor and starter will be in operation. H. S. Robinson and George Diehl will be in charge.

CLEVELAND AUTOMATIC MACHINE CO., Cleveland—The display of this company will be composed of a multiple spindle automatic machine operated by H. W. Rupple, H. M. Rich and A. W. Schaffer.

CLEVELAND TOOL & SUPPLY CO., Cleveland—This booth will be fitted up for reception purposes. Representing the company will be J. C. Whitney, J. A. Abbott, J. A. Camre and J. Reddy.

CLEVELAND TWIST DRILL CO., Cleveland—Three drill presses will be shown in operation, demonstrating special type high speed drills, brass drills and high speed reamers. Harley G. Smith, Thomas Thomas, Frank A. Kelly, R. D. Boltey, F. M. Hoelzle, A. J. Ireland, H. S. White, C. G. Franz, W. E. Caldwell, H. P. Jenson, J. B. Dillard, H. J. Baier and D. H. Burdett will attend.

COLONIAL STEEL CO., Pittsburgh—This company will exhibit tool steel ingots and die blocks; specimens of high speed, carbon and alloy tool steels; iron and muck bar; forgings; hollow and solid drill steel; and safe and jail steel. Those in attendance will be J. Trautman Jr., N. B. Hoffman, F. L. Stevenson, Herbert Bray, Charles Kopenhoefer, W. H. Rieger, and Messrs. Hamilton, Hill, Largey and McKinnon.

CRUCIBLE STEEL CO. OF AMERICA, New York—This company will show various types of steel and steel products and will be represented by E. C. Collins, Dr. John A. Mathews, A. T. Galbraith, R. Michener, F. E. Phelps, R. C. Webster, J. W. Taylor, M. S. Dravo, B. F. Altman and A. H. Kingsbury.

DAILY METAL TRADE, Cleveland—All those who attend the convention are cordially invited to make their headquarters at this booth, which will be fitted up as a restroom. C. J. Stark, H. Cole Estep, J. D. Jease, F. V. Cole, E. L. Shaner, E. F. Ross, J. D. Knox, A. J. Hain, G. H. Manlove, R. T. Mason W. W. Maloney, J. F. Froggett, J. Henry, A. L. Klingeman, S. H. Jasper, L. C. Pelott, V. Dolan, W. L. Ralston, M. Reiner, F. F. Light, R. C. Coursen, Fay Crabs and S. Frank will be the representatives.

DAVENPORT MACHINE TOOL CO., Rochester, N. Y.—This company will show a 5-spindle automatic screw machine and a new type nonstop machine operated by Messrs. Thomas and Dresser.

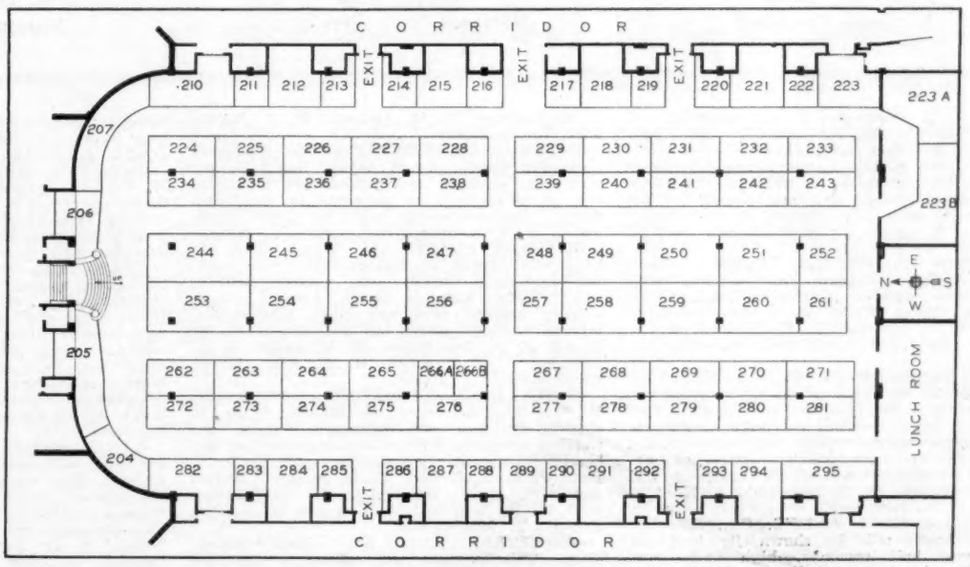
DAVISON GAS BURNER & WELDING CO., Pittsburgh—An oil burner for a hot air furnace, and a line of combination oil and gas burners will be displayed by N. C. Davison and Edward Poor.

DEARBORN CHEMICAL CO., Chicago—Chemical rust preventives and cleaners will be exhibited by E. M. Converse, C. I. Loudenbeck and E. H. Ruhlman.

DISSTON, HENRY, & SONS, INC., Philadelphia—This display of metal cutting products will include inserted and solid tooth

Products at Seventh National Steel Exposition

Exhibitor	Space No.
Holcroft & Co.	16
Hoskins Mfg. Co.	98
Houghton, E. F., Co.	54 and 55
International Machine Tool Co.	215
International Nickel Co.	78 and 89
Interstate Iron & Steel Co.	108
Iron Age Publishing Co.	83
IRON TRADE REVIEW	40
Jessop Steel Co.	119
Jones & Lamson Machine Co.	229 and 230
Jones & Laughlin Steel Corp.	79
Kardex-Rand Co.	Lobby
Kearney & Trecker Co.	205
Keller Mechanical Engineering Co.	248 and 249
Kelley, J. W., Co.	114B
Kelly Reamer Co.	284
Keystone Lubricating Co.	88
King Machine Tool Co.	236
King Refractories Co.	19
Knight, W. B., Machine Co.	214
Landis Tool Co.	293 and 294
Leeds & Northrup Co.	10
Lehmann Machine Co.	35
Leitz, E., Inc.	35
Leland-Gifford Co.	204
Liberty Machine Tool Co.	218 and 219
Lodge & Shipley Machine Tool Co.	260
Lucas Machine Tool Co.	242
Ludlum Steel Co.	29 and 30
Marschke Mfg. Co.	292
Midvale Co.	77
Monarch Machine Tool Co.	207
Morris Machine Tool Co.	286
Morse Twist Drill & Machine Co.	82
Motch & Merryweather Machinery Co.	244 to 261
National Automatic Tool Co.	228 and 238
National Electric Light Association	110
National Equipment Co.	259
National Twist Drill & Tool Co.	265 and 275
New Britain Machine Co.	239 and 240
Norton Co.	231 and 241
Nuttall, R. D., Co.	59
Oesterlein Machine Co.	289
Ohio Steel Foundry Co.	38
Oilgear Co.	226
O. K. Tool Co.	276
Oliver Instrument Co.	227
Olsen, Tinius, Testing Machine Co.	43
Oxweld Acetylene Co.	101
Park Chemical Co.	111
Peerless Machine Co.	12
Pels, Henry, & Co.	291
Penton Publishing Co.	40
Pittsburgh Crucible Steel Co.	87
Pittsburgh Instrument & Machine Co.	103
Potter & Johnston Machine Co.	223 B
Pratt & Whitney Mfg. Co.	277 and 278
Production Machine Co.	251
Republic Flow Meters Co.	69 and 70
Rockford Machine Tool Co.	287
Rockford Milling Machine Co.	266 A
Rockwell, W. S., Co.	61
Rodman Chemical Co.	84
Roessler & Hasslacher Chemical Co.	44
Sebastian Lathe Co.	290
Seneca Falls Machine Co.	295
Shore Instrument & Mfg. Co.	34 B
Simonds Saw & Steel Co.	72 and 73
Skinner Chuck Co.	92
Skybryte Co.	109
Spencer Turbine Co.	90
Stamets, William K.	282 to 292
Standard Tool Co.	92
Starrett, L. S., Co.	94
Strong, Carlisle & Hammond Co.	104 and 105, 207 to 216, and 224 to 238
Sun Oil Co.	115
Surface Combustion Co.	36
Swedish Crucible Steel Co.	27
Swindell, Wm., & Bros.	28 and 39
Taylor & Fenn Co.	283
Taylor Instrument Co.	112
Thompson, Henry G., & Sons Co.	60
Thompson Grinder Co.	259
Timken Roller Bearing Co.	71
Union Twist Drill Co.	272 and 273
United Alloy Steel Corp.	49 and 50
Universal Grinding Machine Co.	279
Vanadium Alloys Steel Co.	64
V & O Press Co.	254
Walcott Lathe Co.	264 and 274
Walker, O. S., Co.	207
Warner & Swasey Co.	262 and 263
Westinghouse Electric & Mfg. Co.	96 and 97
Wheelock, Lovejoy & Co. Inc.	80 and 91
Whitney Mfg. Co.	282
Wilmarth & Morman Co.	243
Wilson-Maeulen Co.	25



Floor plan layout of the National Steel Exposition in Public Auditorium showing the arrangement of booths. At the right is the layout of the arena or main floor and at the left the layout of the basement floor. Registration will be handled in the lobby of the main floor.

be conducted by S. Horace Disston, G. Satterthwaite, D. W. Jenkins, Mr. Forrest, H. B. Allen, J. Dorrington, E. Ludy. C. H. Williams, C. T. Evans, S. T. Harleman and Norman Bly.

DONNER STEEL CO., Buffalo—An exhibit of various forgings and finished parts will be presented by this company which will be represented by W. F. Vosmer, F. R. Huston, J. A. Buell, C. A. Cherry, E. D. Pumphrey, H. C. Richardson, J. W. Donner and R. E. Sherlock.

DRIVER-HARRIS CO., Harrison, N. J.—A display of special materials for carburizing pots, electric furnace windings, heat treating castings, cast grids, cast iron motor cylinder blocks, wire for spark plugs and brake band linings and retorts will be conducted in this booth. In attendance will be G. A. Lennox, W. E. Blythe, H. D. Tietz and Messrs. Waldrip and Prior.

ELECTRIC FURNACE CO., Salem, O.—Electric heating equipment and furnaces for special processes, and for heat treating, annealing, carburizing and enameling; and furnace cross-sections, views of installations and operation data will be shown by this company. Company representatives will be R. F. Benzinger, E. T. Cope and F. J. Peterson.

ELECTRICAL REFRACTORIES CO., East Palestine, O.—This company will exhibit refractories for resistance-type electric furnaces including hanger blocks, mufflers, muffle plates and terminal blocks; and refractories for domestic equipment. In charge of the exhibit will be F. E. Owen, C. W. Williams and F. C. Simms.

ELECTRO ALLOYS CO., Elyria, O.—Thermoalloy high temperature heat resisting castings will be exhibited by this company. A. M. Miller Jr., E. C. White, W. J. Hansen, R. C. Culver, W. C. Whyte, J. B. Thomas, A. L. Garford and J. W. Henry will represent the company.

ENGELHARD, CHARLES, INC., New York—This display will show in operation automatic heat regulators for gas, oil and electric furnaces; new type recorders for electric resistance thermometers and thermoelectric pyrometers; and electric thermal conductivity type gas analyzer. Representatives of the company will be H. DeGallaix, E. S. Newcomb, J. H. Allison and R. W. Newcomb.

EX-CELL-O TOOL & MFG. CO., Detroit—At this booth will be shown jig bushings, high speed ball bearings, high speed and belt-driven internal grinding spindles, and special air turbine-driven spindle. Operating the tools will be N. A. Woodworth, Clifford Peacock, Philip A. Huber, C. R. Alden, W. F. Wise and E. H. Hopson.

FIRTH-STERLING STEEL CO., McKeesport, Pa.—This company will show in operation high speed, carbon and alloy tool steels, and will display specimens of raw materials in the various processes of manufacture. The booth will be conducted by C. O. Ericke, C. E. Hughes, Edwin T. Jackman, Alan Jackman, D. E. Jackman Jr., G. A. Jacobs, T. A. Larecy, W. A. Nungester, I. Olsen, W. C. Royce, M. E. Burkemer, A. Mattson, Henry I. Moore, W. A. Ruppel, A. C. Leete, D. G. Clark and Frank Marth.

FORD, J. B., CO., Wyandotte, Mich—This exhibit of special cleaning specialties will be directed by F. R. Merrick, B. N. Goodell, T. S. Blair, L. C. Warden and C. R. Beaubien.

GANSCHOW, WILLIAM, CO., Chicago—Speed reducers, specimens of cut gearing and heat treated work will be displayed at this booth by C. H. Thomas.

GARDNER TAP & DIE CO., Cleveland—A complete line of taps, and a ¾-inch 6-cylinder semiautomatic nut tapper will be shown in operation. The display will be conducted by J. M. Gardner, C. M. Jackson, H. P. Boggis and Fred E. Criley.

GATHMANN ENGINEERING CO., Baltimore—Special quality sound ingots, ingot molds, sink head castings and illustrations of ingots and of billets will be exhibited by this company. Representatives will be Emil Gathmann, Mark Gathmann and George A. Dornin.

GENERAL ALLOYS CO., Boston—This exhibit will consist of various alloy heat treating containers, boxes, pots, retorts, muffles, dies, chains, burning racks, furnace parts, dipping baskets, pans and trays, and miscellaneous castings, under the direction of H. H. Harris, E. P. Van Stone, W. K. Leach, A. L. Grinnell, J. J. Donovan, R. M. Kirk, H. G. Chase and A. D. Heath.

GENERAL ELECTRIC CO., Schenectady, N. Y.—The operation of various types of electric furnaces and automatic electric arc welding processes will be demonstrated at this booth. Company representatives will be D. G. Brokaw, R. F. Newell, L. B. Rosseau, Walter Anderson, L. A. MacKenney, H. E. Scarborough, C. H. Lockwood, C. L. Ipsen, A. N. Otis and C. T. McLoughlin.

GEOMETRIC TOOL CO., New Haven, Conn.—This company will exhibit in operation adjustable die heads, adjustable taps, chaser grinder, threading machine, tapping machine, adjustable milling tools, high speed and friction-drive tapping devices, quick-change chucks and collets and self-opening stud setter. Those in attendance will be E. W. Mertz, E. J. Gillis, F. W. Gowrie, F. A. Barker, E. L. Wood and G. A. Denison.

GIDDINGS & LEWIS MACHINE TOOL CO., Fond du Lac, Wis.—This company will show in operation an automatic machine grinding roller bearing cones, and a horizontal boring, drilling and milling machine with 12-inch high column and 2-foot extra length bed. Messrs. Kraut and Gebuhr will conduct the booth.

GISHOLT MACHINE CO., Madison, Wis.—At this booth will be shown in operation universal turret lathe, a newly designed geared-head turret lathe, and a balancing machine for rotative parts. E. S. Chapman and C. B. Carr will represent the company.

GODDARD & GODDARD CO., Detroit—A display of high production milling cutters, slab mills, channeling cutters, locomotive taper reamers and helical mills will be conducted by this company which will be represented by A. N. Goddard, C. H. Wallace, R. T. Rice, E. E. Toerner, E. E. Guntert and C. S. Goddard.

GOSS & DELEEUW MACHINE CO., New Britain, Conn.—This company will show a 4-spindle automatic chucking machine in operation under the direction of Stanley T. Goss, Joseph J. Spring and Edwin H. Peck.

GOULD & EBERHARDT INC., Newark, N. J.—This exhibit will consist of a 32-inch shaper operating on die blocks, and a gear hobber cutting transmission gears. It will be conducted by Fred Eberhardt, A. Miller, H. W. Jacobson and G. H. Davis.

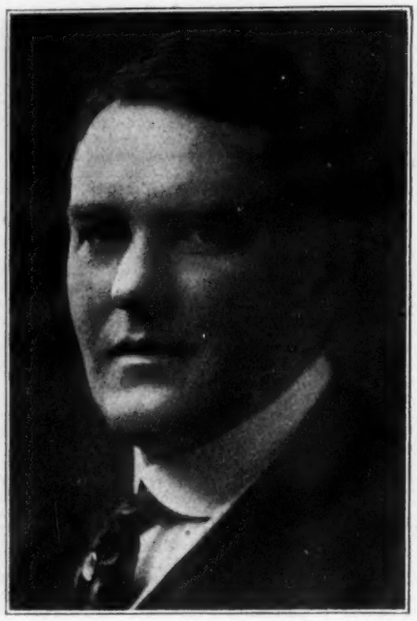
GRAY, G. A., Co., Cincinnati—A high service 36-inch x 36-inch x 10-foot planer with reversing motor drive and helical steel gear train, single-shift rapid traverse, positive dial feed, rail-lock and rail-setter, automatic lubrication, centralized control, and new type heads with twin-purpose taper gibs and abutment tool aprons, will be exhibited by this company. Representatives will be August Marx, F. E. Cardullo, Tell Berna and Philip Leisinger.

HAGAN, GEORGE J., CO., Pittsburgh—This company will exhibit in operation a rotary furnace with automatic charging, hearth and temperature control. Photographs of electric furnace installations also are to be displayed. The company will be represented by R. E. Talley, H. G. Hammer, J. Sandberg, V. A. Hain, C. F. Cone, J. L. Edwards and A. D. Dauch.

HALCOMB STEEL CO., Syracuse, N. Y.—

Men of Prominence in Affairs of the Am

W. S. BIDLE
National President



R. M. BIRD
National Vice President

W. H. EISENMAN
National Secretary

Tools made from carbon, special and high speed steels; engineering parts made from electric steel and specimens of special non-corrosive steels will be shown by this company. H. J. Stagg, M. P. Spencer, J. H. Hinkley, J. F. Kirwan, Arthur Schroeder, T. F. Wood, F. W. Ross, S. C. Spalding, J. T. Leyden, J. H. Schnibbe and E. F. Talmage will represent the company.

HAMMOND MFG. CO., Cleveland—At this booth will be shown in operation a number of motor-driven machines including an 8-spindle automatic deep-hole drilling machine; column and base radial drilling machine with friction tapping attachment; and cabinet base polishing and buffing machine. C. M. Allen and W. D. Buss will conduct the display.

HANSON-WHITNEY MACHINE CO., Hartford, Conn.—On exhibition at this booth will be a semiautomatic thread milling machine; a vertical tool and die shaping machine; a universal tap sharpening machine, all in operation. Taps, gages, precision screws, thread rolling dies and hobs, hardened by the company's special process also will be shown. E. A. Hanson, C. A. Lauridsen and J. W. Johnson will be the representatives.

HEALD MACHINE CO., Worcester, Mass.—The company will exhibit full and semiautomatic grinding machines in operation, all arranged for self-contained full motor drive. James N. Heald, S. T. Massey, R. M. Lippard, R. A. St. John and F. H. Grimshaw will be in attendance.

HEIM GRINDER CO., Danbury, Conn.—Operation of full-automatic, motor-driven, centerless cylindrical grinding machine and equipment for handling through and shoulder grinding will be conducted by this company which will be represented by F. M. Angevin, C. Booth, R. Krametz and C. Previdi.

HEPPENSTALL FORGE & KNIFE CO., Pittsburgh—At this booth will be exhibited an enameled and nickel-plated surface die block. The company will be represented by George I. Allen, Frank C. Moyer, George O. Desautels, C. W. Heppenstall and E. O. Jenkins.

HEVI-DUTY ELECTRIC CO., Milwaukee—This exhibition will include a toolroom furnace, 14 inches wide, 36 inches long and 8 inches high; a 14 x 24-inch x 12-inch deep oil bath; a 15-inch diameter x 30-inch long crucible furnace; and a 1¼-inch diameter x 18-inch long tube furnace. The company representatives will be F. A. Hansen, Edward Busch and F. A. Weiser.

HOLCROFT & CO., Detroit—Illustrations and data on continuous kilns and heat treating and melting furnaces will be displayed by this company. C. T. Holcroft, H. L. Ritts and Alfred Ruckstahl will be in charge.

HOSKINS MFG. CO., Detroit—An electric toolroom furnace with automatic control will be in operation at this booth. Special alloy pyrometers and thermocouples and resistor metals also will be shown. In attendance will be W. D. Little, C. S. Kinnison, W. A. Gatward and J. D. Sterling.

HOUGHTON, E. F., & Co., Philadelphia—At this booth will be displayed heat treating materials, leather belting and packing, and electric pots for liquid heat and drawing temperatures. Representatives will be H. G. Lloyd, H. E. Cressman, W. J. Wright, Robert Smith, J. C. Bentley, W. A. Buechner, F. L. MacNamara, W. A. Fletcher, I. D. Fletcher, D. D. Reed and E. C. Redlin.

INTERNATIONAL MACHINE TOOL CO., Indianapolis—A special 26 x 27½-inch bore special turret lathe for railroad work will be shown in operation by this firm, whose representative will be D. J. Cosner.

INTERNATIONAL NICKEL CO., New York—Specimens of nickel steel and nickel steel parts for industrial use will be shown by this company. The following will represent the company: A. J. Wadhams, Dr. P. D. Merica, Charles McKnight Jr., T. H. Wickenden, J. S. Vanick, L. Muller Thym and R. A. Wheeler.

INTERSTATE IRON & STEEL CO., Chicago—Process samples of raw and forged steel from ingots to finished forgings, and illustrations of developments in heat treating and physical elements will be shown by this company. Paul Llewellyn, W. H. C. Carhart, Elmer Larned, John A. Guyer, R. S. LeBarre and W. J. MacKenzie will be the representatives.

IRON TRADE REVIEW, Cleveland—This booth will be fitted up as a restroom, where those attending the convention are invited to make their headquarters. The publication will be represented by C. J. Stark, H. Cole Estep, J. D. Pease, F. V. Cole, E. L. Shaner, E. F. Ross, J. D. Knox, A. J. Hain, G. H. Manlove, R. T. Mason, W. W. Maloney, J. F. Froggett, J. Henry, A. L. Klingeman, S. H. Jasper, L. C. Pelott, V. Dolan, W. L. Ralston, M. Reiner, F. F. Light, R. C. Coursen, Fay Crabs and S. Frank.

JESSOP STEEL CO., Washington, Pa.—An exhibit of special tool steels, Swedish iron and other raw materials will be held by this company under direction of V. M. Wellman, R. K. Greaves, V. H. Lawrence, J. M. Curley, C. R. Trimmer, E. V. Vogeley and W. J. Fredericks.

JONES & LAMSON MACHINE CO., Springfield, Vt.—In operation at this booth will be two flat turret lathes, one with a 15-inch chucking machine and the other with a 2¼ x 24-inch bar machine. In addition, a screw thread comparator; automatic die head, and ground thread taps will be shown. Representing the company will be Henry S. Beal, Charles H. Seaver, F. L. Watkins and J. L. Reilly.

JONES & LAUGHLIN STEEL CORP., Pittsburgh—An exhibition of various steel products of this company's manufacture will be shown at this booth. A. A. Wagner, E. A. France, J. G. Hutchinson and S. A. Fuller will be in charge.

KARDEX-RAND CO., Tonawanda, N. Y.—All types of visible record plant equipment will be displayed by this company. In charge of the booth will be W. C. Mowry, A. H. Fritchman, S. S. Shane, P. A. Eaton, J. H. Mahrer, L. Glueck, I. M. Stubbart and A. T. Hoover.

KEARNEY & TRECKER CORP., Milwaukee—This company will show in operation milling machines with new style external motor drive and new style motor-in-base drive. One is equipped with a special production rotary fixture and the other with a special production reciprocating fixture. The booth will be conducted by Theodore Trecker, E. J. Kearney, Joseph Trecker, J. B. Armitage, W. K. Andrew, George L. Erwin Jr., R. A. Wellington and Clarence Hochmuth.

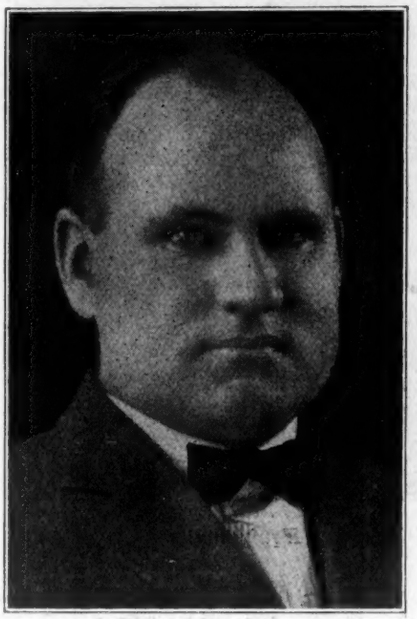
KELLER MECHANICAL ENGINEERING CORP., Brooklyn, N. Y.—This company will show in operation all-round die tool and pattern room machine, cutter and radius grinder, roller floor stand and bench stand flexible shaft grinders. Jules Dierck, A. J. Benson, P. Brown and Charles Bitter will be in charge.

KELLEY, J. W., CO., Cleveland—This booth will contain an exhibit of quenching oils and carburizing compounds. Representatives will be J. W. Kelley and H. B. Northrup.

KELLY REAMER CO., Cleveland—On exhibition at this booth will be a line of adjustable boring and reaming tools, boring bars, piloted bars, mandrels, arbors, and other production tools. M. C. Daw, E. W. Putnam and A. H. Howard will represent the company.

KEYSTONE LUBRICATING CO., Philadelphia—A special lubricating system for machinery bearings will be shown in operation at this booth, together with specimens of grease for varying mechanical conditions. Represent-

American Society for Steel Treating



ZAY JEFFRIES
National Treasurer

J. B. DILLARD
Chairman, Convention Committee

H. A. SCHWARTZ
Chairman, Cleveland Chapter

ing the company will be Peter Cassady, V. Berguson, M. C. Schwenk and F. D. Street.

KING MACHINE TOOL CO., Cincinnati—This company will show in operation a 42-inch gear box motor-drive boring mill. E. A. Muller will be in charge.

KING REFRACTORIES CO., Niagara Falls, N. Y.—This company will display high temperature cements and baffles in use, and will show samples of special cements. The exhibit will be conducted by S. C. Smith and F. A. Podwils.

KNIGHT, W. B., MACHINERY CO., St. Louis—This company will show in operation a high speed milling machine with horizontal milling and shaping attachments, and specimens of work. W. B. Knight Jr. will be in charge of the booth.

LANDIS TOOL CO., Waynesboro, Pa.—Crank grinding machines, and hydraulic traverse plain and internal grinding machines will be exhibited by this company under the supervision of J. S. Baker, I. S. Deardorff, F. Griner, C. M. Talhelm and W. G. Nevin.

LEEDS & NORTHRUP CO., Philadelphia—New type circulating air drawing furnaces; hump-type furnaces; recording and indicating pyrometers; automatic temperature controllers, and miscellaneous steel treating instruments will be shown in operation at this booth. Representatives of this company will be G. W. Tall Jr., A. E. Tarr, Henry Brewer, E. B. Estabrook, O. Brewer, P. H. Taylor, A. F. Moranty, H. R. Abey, C. C. Graf, W. A. Lane, T. C. Smith, Jordon Korp and J. P. Docherty.

LEHMANN MACHINE CO., St. Louis—This booth will have in operation a 22-inch x 24½-inch x 11-foot, 16-speed, motor-driven, gear-head engine lathe with improved taper attachment. An improved 16-speed geared-headstock and 24-inch hardened lathe spindle with patented nose also will be on display. Paul Lehmann will conduct the booth.

LEITZ, E., INC., New York—This company will demonstrate a new model micrometallograph with photographic specimens; new grinding and polishing machines; ore dressing microscope; and low power industrial magnifier. Messrs. Ziegler and Vollrath will conduct the exhibit.

LELAND-GIFFORD CO., Worcester, Mass.—In operation at this company's booth will be a drill grinder; and 1, 2, and 3-speed ball bearing drilling machines with power feed. Company representatives will be S. Nikoloff, S. B. Dowd, A. H. Anderson and E. A. Heidlinger.

LIBERTY MACHINE TOOL CO., Hamilton, O.—A 36-inch x 36-inch x 10-foot 2-housing late model planer with reversing motor drive and two rail heads and side heads employing individual motors for rapid traverse will be exhibited by this company. Representatives will be A. R. McCann, A. Iutzig and J. Milliken.

LODGE & SHIPLEY MACHINE TOOL CO., Cincinnati—A 14-inch selective-head toolroom lathe will be exhibited by this company which will be represented by Fred Albrecht and J. M. Stephens.

LUCAS MACHINE TOOL CO., Cleveland—A horizontal boring, drilling and milling machine, and a power forcing press will be displayed by this company. F. P. Sprague, and J. A. Leighton will conduct the exhibit.

LUDLUM STEEL CO., Watervliet, N. Y.—This company will exhibit carbon, alloy, high speed and special alloy tool steels; rust and stain resisting steels and iron; and heat resisting and noncorrosive steels. Methods of production also will be shown. Representatives of the company will be H. G. Batcheller, W. H. Vrooman, C. B. Templeton, A. K. Martin, R. P. DeVries, W. H. Keen, W. J. Fitzgerald, W. L. Weaver, T. C. Sherman, P. R. Thurston, W. Kinsey, J. E. Polhemus, H. W. Spiegel, H. I. Askew Jr. and J. J. Cruice.

MARSCHKE MFG. CO., Indianapolis—A 20-inch heavy-duty and a 12-inch general duty grinder, each with late design wheel guards will be operated by this company under direction of W. A. Marschke.

MIDVALE CO., Philadelphia—This company will display a Diesel engine crankshaft with brass extrusion cam; forged and hardened rolls; tool steel products; and a hammer piston rod. In attendance will be Stuart Hazlewood, H. H. Ziesing, H. E. Rowe, Ward A. Miller, Fred W. Sager, Harry Teel and T. G. Besom.

MONARCH MACHINE TOOL CO., Sidney, O.—This exhibit will be composed of a 9 x 3-inch lathe, a 14 x 6-inch toolroom, an 18 x 6-inch manufacturing and a 22 x 12-inch engine lathe. All have helical, geared-heads and are motor driven. W. E. Whipp and J. A. Raterman will represent the company.

MORRIS MACHINE TOOL CO., Cincinnati—A 3-foot heavy duty radial drill for variable-speed motor drive will be displayed by this company under the direction of E. G. Meckstroth and A. C. Pletz.

MORSE TWIST DRILL & MACHINE CO., New Bedford, Mass.—At this booth will be exhibited a universal grinder; also specimens of various high speed and carbon steel tools, drills, reamers, taps and dies, and milling cutters. The company will be represented by William T. Read, F. O. Lincoln, Waldo F. Congdon, Milton G. Bonner and Robert W. Mein.

MOTCH & MERRYWEATHER MACHINERY CO., Cleveland—This company will represent a number of machine tool manufacturers whose exhibits are described elsewhere under individual company listings. Representatives of the company will be G. E. Merryweather, E. R. Motch, E. R. Motch Jr., R. J. Houck, J. S. Phelps, W. F. Wissman, W. F. Hall, A. B. Einig, W. F. Gallen, R. G. Knapp, E. A. Shriver, M. H. Dones, L. C. Lobitz, E. C. Batchelar, J. T. McCuen, L. A. Rafferty, J. A. Menges, L. C. Deckard, J. L. Vance, R. C. Handleser, E. F. Lickey, E. A. Guntrom, H. C. Bayliss, J. F. Dittus, V. Gottsman and N. H. Carpenter.

NATIONAL AUTOMATIC TOOL CO., Richmond, Ind.—This company will present an exhibit of drillers and tappers in operation, and of special universal joints and tool holders under the direction of F. A. Root.

NATIONAL ELECTRIC LIGHT ASSOCIATION, New York—The association booth will exhibit photographs and engineering data on industrial heating installations.

NATIONAL EQUIPMENT CO., Springfield, Mass.—A new type forging and riveting machine will be displayed by this company which will be represented by A. L. Bausman, G. A. Bausman, Joel Whitney, Charles Gowing and John Peterson.

NATIONAL TWIST DRILL & TOOL CO., Detroit—A display of drills, reamers, cutters, hobs and special tools with parabolic milling cutters in operation will be shown at the booth of this company. Harry Butler, C. Cornwall and G. Webster will be the representatives.

NEW BRITAIN MACHINE CO., New Britain, Conn.—This company will show in operation types of chucking machines and a 6-spindle automatic screw machine. The representatives will be E. L. Steinle, G. K. Atkinson, T. C. Stirling, H. L. Wilson, C. L. Perry, C. Hanson and S. Mayerjack.

NORTON CO., Worcester, Mass.—This exhibit will show in operation grinding wheels and cylindrical grinding machines; also special floor products, tile and treads, and refractories. Representatives will be O. E. Nordstrom, Erick Hellstrom, O. A. Knight, C. H. Hill, W. T. Montague, H. J. Griffing and H. W. Dunbar.

NUTTALL, R. D., CO., Pittsburgh—Gears and pinions, special process heat treated and hardened; single helical rolled steel gears for traveling crane and specimens of other mill parts will be exhibited at this booth which will be conducted by Q. W. Hershey, J. E. Mullen, W. H. Phillips, R. W. Young, W. H. Smith and C. H. Parker.

OESTERLEIN MACHINE CO., Cincinnati—Motor-driven constant-speed milling machine and universal and tool grinders will be displayed at this company's booth. George M. Meyncke will represent the company.

OHIO STEEL FOUNDRY CO., Springfield, O.—An exhibit of special alloy heat resisting castings, boxes, plates, beams, rails, furnace disks and miscellaneous castings will be shown at this booth which will be in charge of T. H. Harvey and C. E. Malley.

OILGEAR CO., Milwaukee—A 10-ton semi-automatic broaching and assembling press will be operated by this company under the direction of Donald Clute and Harold Crull.

O. K. TOOL CO., Shelton, Conn.—An operating exhibit of special type motor-driven grinding machine with special regrinding attachment will be featured at this booth. Representing the company will be F. J. Wilson, R. R. Weddell, R. S. Young and Frederick Schroeder.

OLIVER INSTRUMENT CO., Adrian, Mich.—An automatic drillpointer; a special point thinner; and a special diemaking machine will be featured by this company. E. C. Oliver will conduct the display.

OLSEN, TINIUS, TESTING MACHINE CO., Philadelphia—Various types of testing machines will be displayed in operation at this booth, including hardness testing machines; extensometers; strain gages; elongation scale for tension and compression testing; latest type motor-driven ductility testing machine for sheet metal; and crankshaft and flywheel balancing equipment for correcting static and dynamic unbalance of rotating parts. Jacob Lundgren and William J. Tretch will have charge of the booth.

OXWELD ACETYLENE CO., New York—This company will demonstrate acetylene and

Cleveland Public Auditorium Affords Excellent Facilities for Displaying Equipment

carbide apparatus in weld making. Welds will be cut into coupons with an oxy-acetylene straight line blowpipe and tested in a universal testing machine. Representatives of the company will be E. E. Thum, J. W. Dunn, J. P. Dawson, J. V. Upton and H. H. Dyar.

PARK CHEMICAL CO., Detroit—This company will have on exhibit case hardening compounds, cyanide mixtures, drawing salts and other heat treating materials. In charge of the display will be J. N. Bourg, D. W. Bauer and F. W. Faery.

PEERLESS MACHINE CO., Racine, Wis.—An operating display of high speed hack-sawing machinery will be shown by this company under the direction of R. T. Ingalls, A. H. Goetz and Charles Rasmussen.

PELS, HENRY, & CO., NEW YORK—This exhibit will show in operation new type triple combined punching and shearing machines. Representing the company will be T. C. Sternblad.

PENTON PUBLISHING CO., Cleveland—Those attending the convention are invited to make their headquarters at this booth, which will be fitted up as a restroom. Representatives will be C. J. Stark, H. Cole Estep, J. D. Pease, F. V. Cole, E. L. Shaner, E. F. Ross, J. D. Knox, A. J. Hain, G. H. Manlove, R. T. Mason, W. W. Maloney, J. F. Froggett, J. Henry, A. L. Klingeman, S. H. Jasper, L. C. Pelott, V. Dolan, W. L. Ralston, M. Reiner, F. F. Light, R. C. Coursen and S. Frank.

PITTSBURGH CRUCIBLE STEEL CO., Pittsburgh—Speciments of forging grades of steel, with photographs and data charts will comprise the display of this company, which will be conducted by F. B. Hufnagel, R. M. Keeney, A. H. Sonnhalter, O. L. Pringle, S. D. Williams, W. I. McInerney, E. T. Walton, W. E. Davis, W. P. Benter, W. R. Howell, W. W. Williams, K. E. Porter, J. N. Critchlow, T. A. Goodridge, H. T. Harrison, B. B. Holt and Myron Powers.

PITTSBURGH INSTRUMENT & MACHINE CO., Pittsburgh—Brinell hardness testing machines with microscopes and depth gages; impact testing machine; metal sheet tester; metallographic grinder; and weight calculating instrument for car wheel manufacturers will be shown in operation by this company. Representatives will be Paul Kammerer and Charles Trueg.

POTTER & JOHNSTON MACHINE CO., Pawtucket, R. I.—A 24-inch universal shaping machine and automatic chucking and milling machines will be shown in operation at this booth. Representative of the company will be N. R. Earle.

PRATT & WHITNEY CO., Hartford, Conn.—An exhibit of machine tools including 6-inch shaper; 13 x 30-inch automatic centering machine; double bench outfit with lathe; universal milling machine and drill press; supermicrometer; and specimens of small tools and gages will be shown in operation at this booth. W. P. Kirk, A. E. R. Turner, J. J. Heber, G. E. Thomas, E. C. Shultz, E. J. Sullivan and A. H. d'Arcambal will be in charge.

PRODUCTION MACHINE CO., Greenfield, Mass.—In operation at its booth this company will show cylindrical and flat type polishing machines and combined disk grinder and polishing machine. A. H. Behnke and Mr. Fuller will be in charge.

REPUBLIC FLOW METERS CO., Chicago—A line of instruments including indicating and recording pyrometers and equipment and combustion, draft and flow meters will be shown in use at this exhibit. The company will be represented by J. S. Cunningham, C. C. McDermott, G. B. Nightingale, M. E. VanVliet, A. M. Steeler, F. A. Hall and D. J. Jones.

ROCKFORD MACHINE TOOL CO., Rockford, Ill.—This exhibit will consist of an operating display of a 24-inch mechanic's production drill press and a 24-inch improved variable speed motor. M. Monson and William K. Stamets will be in charge.

ROCKFORD MILLING MACHINE CO., Rockford, Ill.—A rigid milling machine with motor drive and cutters and a stub lathe with motor drive and tooled for automotive production will be exhibited in operation under the direction of Charles B. DeVlieg and G. A. Markuson.

ROCKWELL, W. S., CO., New York—Models of operating furnaces will be on exhibit at this company's booth. J. N. Voltman and C. D. Barnhart will be in attendance.

RODMAN CHEMICAL CO., Verona, Pa.—Carburizing materials, quenching and tempering oils, and luting clay will be displayed by this company. Representatives will be Hugh Rodman, Gordon A. Webb, S. P. Rockwell, Warren D. Fuller and O. T. Muehlemeyer.

ROESSLER & HASSLACHER CHEMICAL CO., New York—This company will give a demonstration of electroplating and case hardening of steel with special chemical compounds. William M. Gager and C. H. Proctor will conduct the exhibit.

SEBASTIAN LATHE CO., Cincinnati—This company will operate a 6 x 15-inch geared-head motor-driven lathe under the direction of E. E. Stokes.

SENECA FALLS MACHINE CO., Seneca Falls, N. Y.—A display of economical production lathes and screw cutting engine lathes will be conducted by this company whose representatives will be E. R. Smith, J. A. Fyfe, W. H. Nettle, F. B. Webb, M. C. Day and G. J. Hawkey.

SHORE INSTRUMENT & MFG. CO., New York—Instruments to be shown will include standard and special scleroscopes and electric actuators; tilting tables; pyroscopes for 1200 to 3000 degrees Fahr.; instruments for measuring hardness and elasticity of plastic materials; and carbon and hardness control meters. The company will be represented by F. G. Kendall.

SIMONDS SAW & STEEL CO., Fitchburg, Mass.—Metal cutting and slitting saws, solid and inserted tooth types; screw slotters; files; hack saw blades; tool holder bits; carbon and high speed steel machine knives; and specimens of steels used in their manufacture will be displayed at the booth of this company. Geroge T. Curtis, H. B. McDonald and H. D. Weed will be in charge.

SKINNER CHUCK CO., New Britain, Conn.—Lathe, drill and planer chucks will be shown in operation, also a small bench lathe; cross section models to show operating mechanism of lathe chucks; box body 2-jaw lathe chucks of new design; and air-operated chucks with new type cylindrical jaw. William H. Day will conduct the display.

SKYBRYTE CO., Cleveland—This company will exhibit special materials for industrial plant glass cleaning. T. T. Holt and V. S. Loventhal will be in charge.

SPENCER TURBINE CO., Hartford, Conn.—This company will exhibit high power turbo-compressors under the direction of S. E. Philips and H. M. Grossman.

STAMETS, WM. K., Hartford, Conn.—This company will represent a number of machine tool manufacturers whose exhibits are described elsewhere under individual company listings. In attendance will be William K. Stamets, W. R. King, W. H. Barber, George D. Miller and W. E. Tabb.

STANDARD TOOL CO., Cleveland—At this booth will be conducted a display of twist drills, reamers, taps and milling cutters, and the processes of manufacture illustrated. In attendance will be H. C. McKean, R. T. Lane, E. E. Northway, H. Will, Clarence Buck, T. Bascom, D. R. Higgins, D. G. MacMillan and J. G. Green.

STARRETT, L. S., CO., Athol, Mass.—This company will exhibit tools, steel tapes, hack saw blades and vises. D. Findlay, Arthur H. Starrett, O. J. Rogers and J. E. Hindes will represent the company.

STRONG, CARLISLE & HAMMOND CO., Cleveland.—This company will represent a number of machine tool manufacturers whose exhibits are described elsewhere under individual company listings. An automatically controlled electric furnace and electrically heated high speed and lead hardening furnaces also will be operated. Representatives will be T. W. Carlisle, W. H. McClelland, G. S. Peterson, J. Weintz, A. B. Lindsay, T. W. Clark, F. C. Parsons and G. E. Kruger.

SUN OIL CO., Philadelphia—This company's exhibit will be composed of petroleum products such as cutting oils, motor, fuel, tempering and quenching oils and greases. R. S. Drysdale, C. K. Hague and C. B. Harding will represent the company.

SURFACE COMBUSTION CO., New York—Different models and designs of furnaces will be exhibited by this company which will be represented by C. A. Blesch and A. A. Treadway.

SWEDISH CRUCIBLE STEEL CO., Detroit—Nickel alloy and steel castings; carbonizing boxes; lead and cyanide pots; furnace crates; and retorts will be shown by this company. Representatives will be Henry Nixon and S. R. Allen.

SWINDELL, WM., & BROS., Pittsburgh—Electric heat treating furnaces will be shown in operation at this company's booth. E. H. Swindell, R. W. Porter, F. W. Brooks and G. P. Mills will have charge of the exhibit.

TAYLOR INSTRUMENT COS., Rochester, N. Y.—Oil testing, index and recording thermometers; thermoelectric and new design portable pyrometers will be exhibited at this booth. G. A. Howell, H. W. Maurer Jr. and A. H. Goddard will be present.

TAYLOR & FENN CO., Hartford, Conn.—A high speed vertical milling machine with circular milling and other attachments, a 2-spindle horizontal milling machine and a 3-spindle sensitive drilling machine with hand feed, power feed and tapping head will comprise this company's display. George S. DeLany and Niels Carlson will be in charge.

THOMPSON GRINDER CO., Springfield, O.—A 10 x 36-inch self-contained universal grinder will be operated at this company's booth. H. J. Warrick will represent the company.

THOMPSON, HENRY G., & SONS CO., Hartford, Conn.—A positive feed metal cutting machine and a special exhibit of metal cutting saws will be shown by this company under direction of Fellows Thompson, Graham Thompson and T. A. Hyde.

(*Concluded on Page* 568)

Side View of Cleveland Public Auditorium

Fig. 1 (Left)—Specimen *A* shows dendritic structure retained by quick cooling. X2. Specimen *B* shows absorption of dendrites by slow cooling. X2. Fig. 2 (Center)—Appearance of ferrite dendrite of Fig. 1*A* at higher magnification. X75. Fig. 3 (Right)—Appearance of slowly cooled untreated casting of Fig 1*B*. X75

Cooling Cause of Brittleness

Investigation Shows That Steel Castings Cooled Slowly Are Less Brittle Than When Cooling Is Forced—For Best Results, Work of Moderate Size Should Be Cooled in the Mold

By Stanley A. Richardson

OBSERVATIONS concerning the relation between the initial structure of steel castings and their brittleness are reported in this article. The castings investigated were of the ordinary 0.20-0.30 per cent carbon steel in general use. The physical qualities and photomicrographs were obtained from bars made on the standard test block casting weighing about 40 pounds and having three 1-inch test bars attached to the underside, as recommended by the American Society for Testing Materials.

The initial structure of a steel casting of any given composition and degree of freedom from inclusions apparently depends upon the length of time that elapses between the freezing and the passage of the solidified metal through its Ar_2 temperature. For a steel casting of given mass and design, the chief variable in foundry practice in controlling this time interval is the time of "shaking out" or removal of the casting from the mold. It will aid in the consideration of this problem to review the commonly accepted mechanism of the freezing of low carbon steel.

Referring to the iron-carbon equilibrium diagram in Fig. 13 it is seen that with the cooling of 0.25 per cent carbon steel to the liquidus temperature, freezing begins with the formation of nearly carbon-free iron dendritic crystals. As these iron or ferrite dendrites grow by accretion from the liquid metal, the remaining increasing carbon-rich liquid is concentrated between the arms of each dendrite and between adjoining dendrites. Equili-

The author is assistant professor of metallurgy, Lewis institute, Chicago.

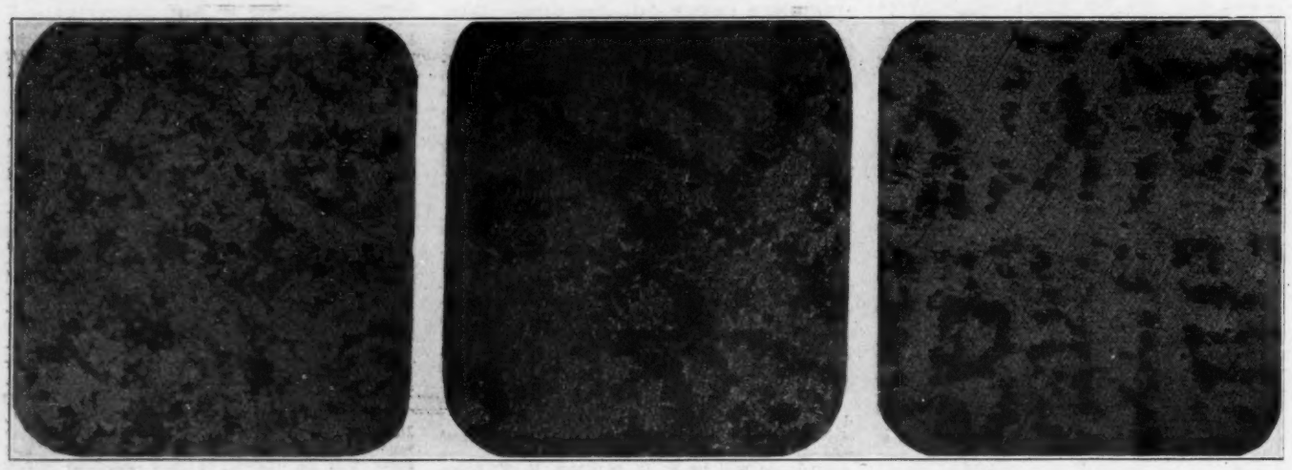


FIG. 4 (LEFT)—ANNEALED CASTING WHOSE INITIAL COOLING WAS SLOW. X75. FIG. 5 (CENTER)—SPECIMEN FROM SAME CAST AS FIG. 4 EXCEPT INITIAL COOLING WAS RAPID. X75. FIG. 6 (RIGHT)—ANOTHER ANNEALED CASTING WITH SLOW INITIAL COOLING. X75 REDUCTION OF AREA 39 PER CENT

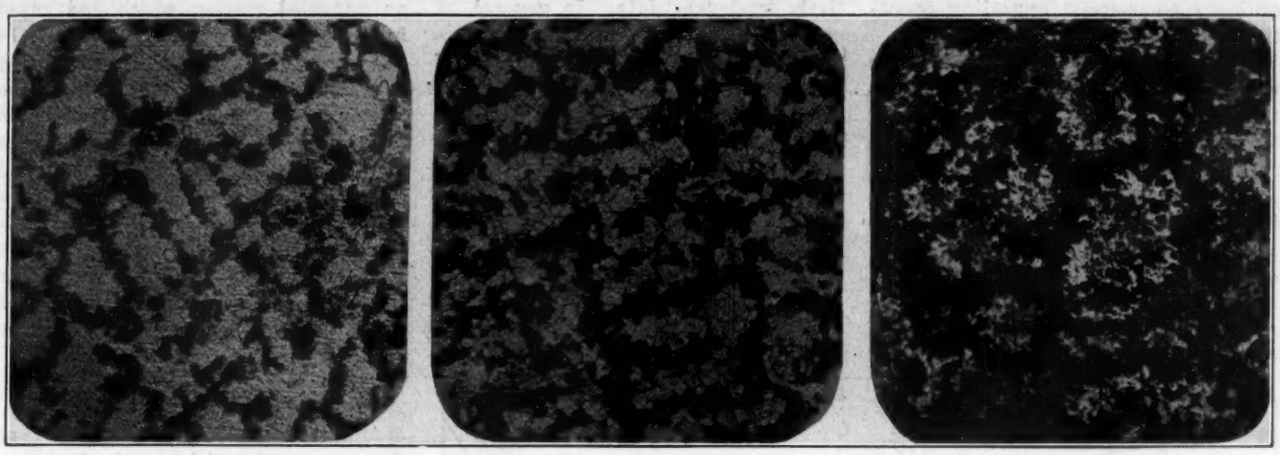


FIG. 7 (LEFT)—SPECIMEN FROM SAME CAST AS FIG. 6 AND ANNEALED IN SAME LOT BUT HAVING RAPID INITIAL COOLING. X75. REDUCTION OF AREA 26 PER CENT. FIG. 8 (CENTER)—ANNEALED CASTING AFTER RAPID INITIAL COOLING. X75. REDUCTION OF AREA 17 PER CENT. FIG. 9 (RIGHT)—ANNEALED CASTING AFTER RAPID INITIAL COOLING. X75. REDUCTION OF AREA 14 PER CENT

brium tends to be established by the diffusion of the carbon throughout the iron. This diffusion continues during solidification and afterward during the cooling until the Ar_3, or critical temperature is reached, or, until uniform distribution of the carbon throughout the iron has been attained. This diffusion is accompanied by another phenomenon—the destruction of the dendrites or pine-tree crystals. If sufficient time is not allowed in the cooling of the steel, this diffusion of the carbon throughout the iron is not accomplished and the dendritic structure is not destroyed.

Pearlite Is Concentrated

Dendritic structure in steel renders it brittle, due evidently to the massive concentration of carbon-bearing material, or pearlite, between the branches of each dendrite and between adjoining dendrites. From a typical group of steel castings, tested in the untreated cast condition, the following average properties were obtained:

	Cooled quickly	Cooled slowly
Tensile strength, pounds per square inch	84,000	80,500
Yield point, pounds per square inch	41,500	40,500
Reduction of area, per cent	15	26.5
Elongation, per cent	12	22
Brinell hardness	175	170
Impact, foot pounds	6	11

The general structural condition in each of these cases is shown in the photomacrographs in Fig. 1. Specimen *A* shows the dendritic structure retained by quick cooling, while specimen *B* shows how the absorption of the dendrites was accomplished by slow cooling. In other words, the harmful dendritic structure is not produced by slow cooling as many foundrymen appear to believe, but it is retained by rapid cooling, as should be expected from a consideration of the conditions necessary for the attainment of equilibrium.

Microscopic examination of fractured specimens has shown that the path of fracture in general passes between dendrites, indicating that the ferrite dendrites themselves are not especially brittle, but that the brittleness is the property of the interdendritic carbon-rich filling. Fig. 2 shows, at higher magnification, the appearance of a ferrite dendrite such as shown in specimen *A* in Fig. 1. Fig. 3 shows at higher magnification the structure of an untreated casting whose initial cooling was slow, as the specimen *B*, in Fig. 1.

Cooling Time Affects Structure

The major portion of all steel castings produced is used in the annealed condition, a few are used in their initial or cast condition, while, in the average foundry, but few are given hardening and tempering heat treatment. The annealing operation ordinarily consists of heating the castings at a temperature of 1600-1700 degrees Fahr. for several hours and then allowing them to cool in the furnace until nearly black. The effect of the initial structure as produced by the rate of cooling from the molten state apparently survives the

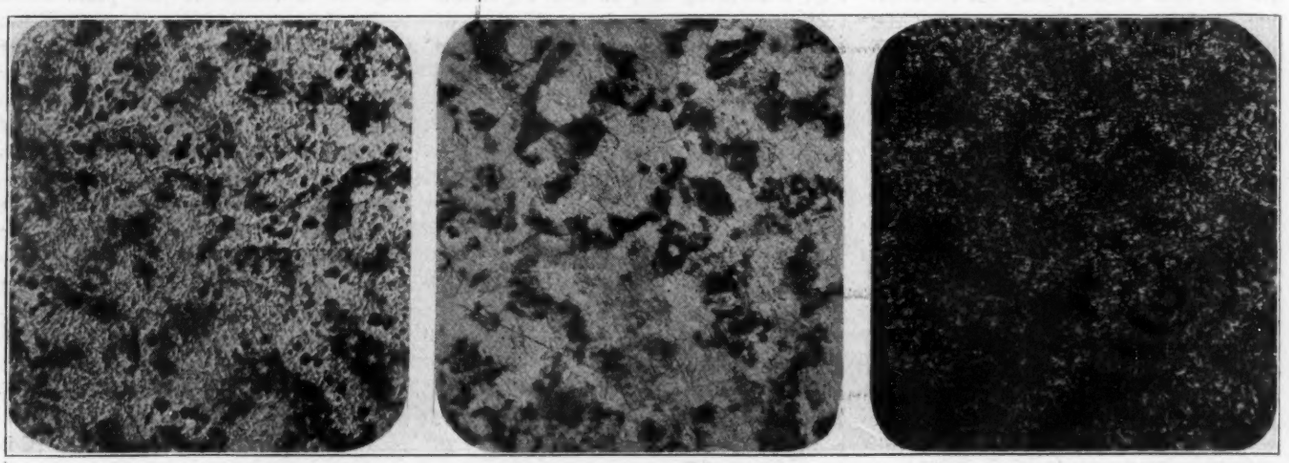


FIG. 10 (LEFT)—CASTING ANNEALED AFTER SLOW COOLING FROM MOLTEN STATE. X75. REDUCTION OF AREA 38 PER CENT. FIG. 11 (CENTER)—STRUCTURE OF ANNEALED CASTING HAVING HAD SLOW INITIAL COOLING. X75. REDUCTION OF AREA 42 PER CENT. FIG. 12 (RIGHT)—CASTING COOLED RAPIDLY FROM MOLTEN STATE, ANNEALED AND FOLLOWED BY AIR COOLING TREATMENT. X75. REDUCTION OF AREA 10 PER CENT

ordinary commercial annealing operation.

Castings cooled slowly from the molten state after annealing have their pearlite, or the hard carbon bearing constituent, in disconnected masses, separated from each other by the soft ductile constituent ferrite or free iron. Castings cooled rapidly by removal from the mold immediately upon solidification, after annealing have their pearlite in connected masses or strands, or in continuous rings. Since fracture appears to traverse the pearlitic areas, a connected mass of pearlite provides a ready path for rupture, which then occurs shortly after the bar under stress begins to decrease in diameter.

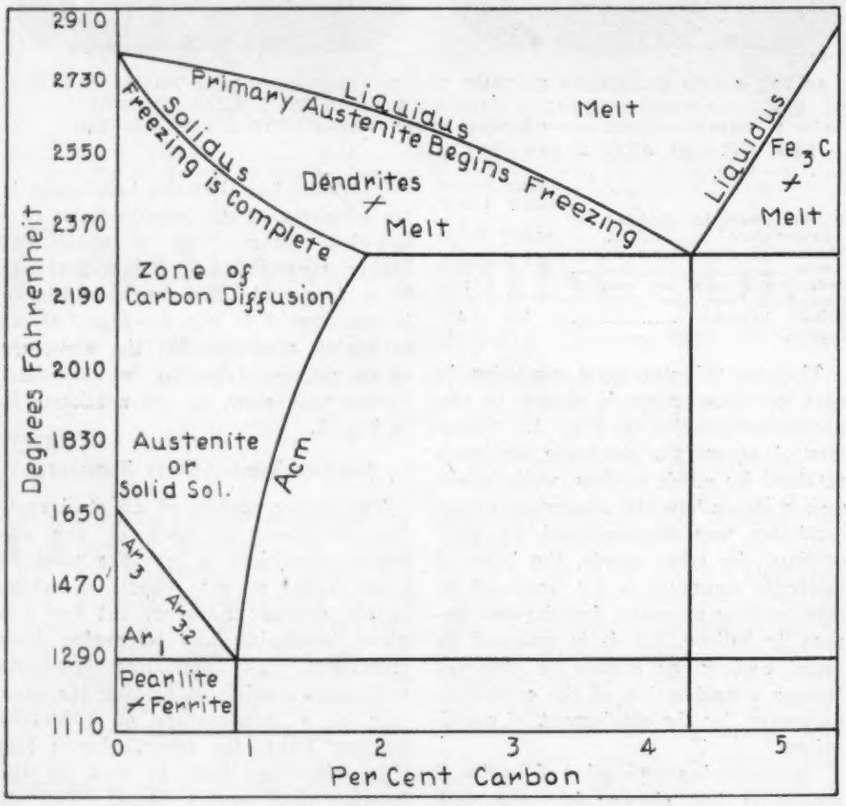


FIG. 13—IRON-CARBON EQUILIBRIUM DIAGRAM

It should be recalled that steel castings seldom fail to meet specifications because of low tensile properties but do fail because of low ductility. There is in engineering design in general no safeguard against low tensile proas is possible against low tensile properties. It is considered generally that of the several properties of steel ordinarily determined in physical testing, the percentage reduction of area is the best index of the steel's brittleness. In this discussion, therefore, it will suffice to compare the physical quality of the various steel castings on the basis of their percentage reduction of area, in order to avoid quoting a large amount of comparatively irrelevant data. In general, of course, the other properties vary in proportion. The reduction of area of good steel castings of the type under consideration in the annealed condition should be between 35 and 45 per cent.

The following photomicrographs have been selected from a number representative of the condition under discussion. Fig. 4 shows an annealed casting whose initial cooling was slow. It had a reduction of area of 38 per cent. Fig. 5 shows a specimen from the same cast of steel as that in Fig. 4 differing only in that its initial cooling was rapid. Its reduction of area was 28 per cent. The difference in the microstructure is very evident. The rings and strands in Fig. 5 are obviously the residue of the carbon-rich deposits observed between the arms of each ferritedendrite and between adjoining dendrites in quickly cooled castings.

Fig. 6 shows another annealed casting of slow initial cooling, which had a reduction of area of 39 per cent. Fig. 7 shows the structure of a casting from the same heat of steel annealed in the same lot with that in Fig. 6, but having had rapid initial cooling. The reduction of area was 26 per cent.

Fig. 8 shows an annealed casting after rapid initial cooling. Reduction of area 17 per cent. Fig. 9 shows an annealed casting which had rapid initial cooling. Reduction of area 14 per cent. Fig. 10 shows a casting annealed after slow cooling from the molten state. Reduction of area 38 per cent. Fig. 11 shows the structure of an annealed casting having had slow initial cooling. Reduction of area 42 per cent. Fig. 12 shows a casting cooled rapidly from the molten state and annealed followed by an air cooling treatment. The persistance of the carbon-rich deposits is evident. The reduction of area was 10 per cent.

How Failure Takes Place

A more complete understanding of the nature of brittleness in low carbon steel castings free from inclusions calls for consideration of the possible mechanism of failure of such steel. It is considered by the author that steel under physical test fails when the stress operating to reduce the cross-sectional area has a chance to act through a clear field of pearlite. When a piece of low carbon steel stretches under stress, the ferrite at any given point elongates and the pearlite particles of that point, being of course relatively brittle, pack or are crowded together in a plane perpendicular to the axis of the test bar. When this packing reaches a degree such that there is a field of pearlite across the bar, failure occurs, presumably because the pearlite is unable to undergo the compression that further decrease in the cross-section of the bar would involve. Briefly then, the ductility of low carbon steel appears to be a function of the distance apart of its pearlite particles.

If there is in the bar an initial agglomerate of pearlite, or a continuous strand of the same across the piece, such as shown to be produced by rapid initial cooling of a steel casting, the ductility of the piece must be low because under such a condition the critical degrees of packing of the pearlite will be reached with very little reduction in the cross-sectional area of the bar. This hypothesis of the mechanism of failure of low carbon steel accounts, then, for the relation observed to exist between the brittleness of steel castings and the rate of their initial cooling. The foregoing is merely equivalent to stating that rapid initial cooling of steel castings tends to render the brittle constituent pearlite continuous and the ductile constituent ferrite discontinuous, whereas slow cooling from the molten state tends to reverse this condition.

It is known that, in an alloy consisting of an aggregate of two con-

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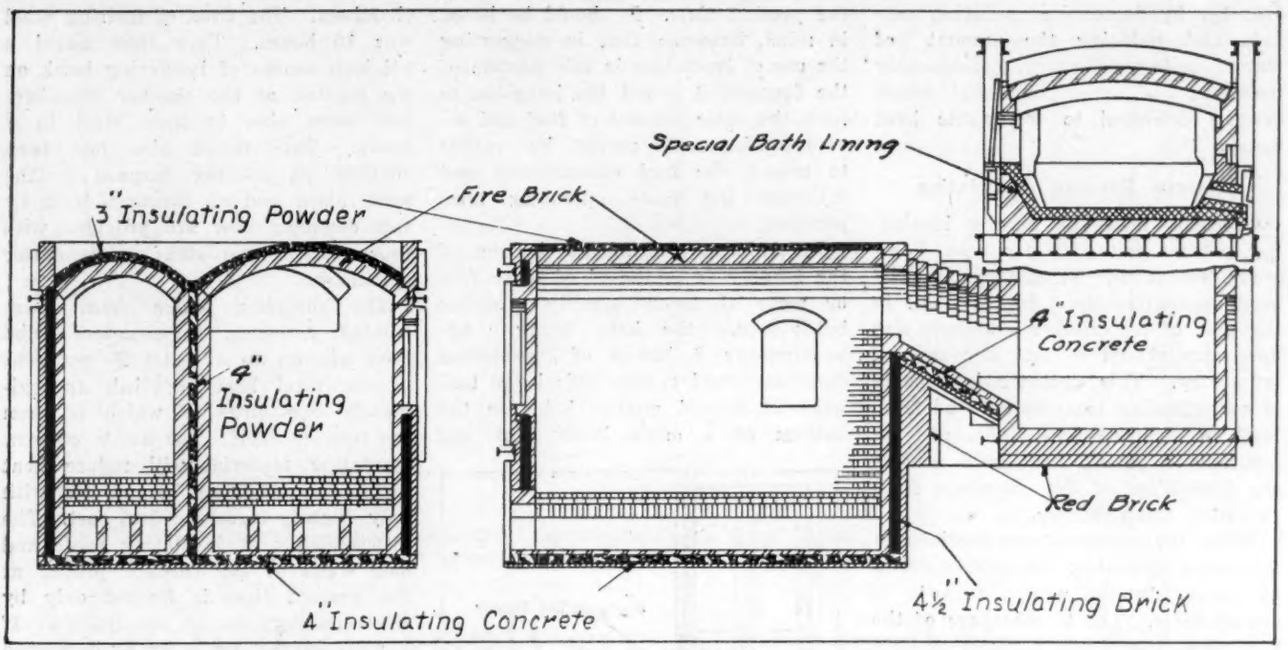


Fig. 1—Sectional view of an open-hearth furnace with the regenerator insulated.

Reducing Steel Melting Costs

Proper Insulation of Open-Hearth Equipment an Aid to Furnace Efficiency—Treatment of Roof and Walls Would Effect Material Fuel Saving—General Installation Described

By E. A. Phoenix

AT BEST efficiency of the open-hearth furnace is low, based on the percentage of heat which actually is taken up by the bath. The overall efficiency of the open hearth can be increased by the use of insulation and the prevention of excessive heat loss due to conduction and radiation, particularly in the regenerative system. Considerable data have been published on this subject and many recent open-hearth installations are thoroughly insulated in gas and air checkers and flues. In a comprehensive paper by Waldemar Dyrssen of the United States Steel Corp., heat balances are given which clearly indicate the substantial savings which can be effected by the intelligent use of insulating materials in the open-hearth system. Data contributed by F. B. Quigley of the Carnegie Steel Co., Youngstown, O., and by Messrs. Kinney and McDermott of the Illinois Steel Co., South Works, also bring out the importance of insulation in decreasing melting costs.

Regardless of whether waste heat is utilized, it is unquestionably true that the increase in checker chamber temperature, due to insulation, permits of a lower fuel consumption in the melting chamber and a corresponding increase in the efficiency of the furnace. Furthermore, the insulation tends to reduce air infiltration greatly, and in brick walls the exterior temperature is reduced to such an extent as to enable the use of waterproof or airtight compounds without danger of their deteriorating, becoming brittle, cracking, or losing their effectiveness.

Decreases Waste Heat

With the increasing use of waste heat boilers for recovering the surplus heat in waste gas, the insulation of the checker chambers and the prevention of infiltration of air become increasingly important. It has been proved in practice that a much larger amount of steam is produced in the waste heat boilers if the checker chambers are properly heat insulated and if care is taken to close up openings which allow air to be mixed with the waste gases before entering the waste heat boilers. In modern installations care also is taken to design reversing valves in such a way that heat and draft losses are at a minimum. The most efficient of these reversing valves on the market are insulated with insulating brick.

The general methods of insulating open-hearth regenerators are shown in Figs. 1 and 2. It will be noted that insulating brick are shown in the side walls of the checker chambers. However, in some cases where the checker chambers have been steel incased, 4½ inches of insulating powder has been used between the fire brick and the steel casing and this construction is entirely satisfactory. The use of insulating powder in the division wall between the gas and air chambers is recommended primarily to reduce air infiltration. In chambers not so sealed, there is a considerable loss due to short circuiting of the gas and air through the division wall and consequent combustion in the checker chambers.

Bringing producer gas directly to the port and doing away with gas regenerators is advocated by many open-hearth engineers. Tests have shown that little preheating is accomplished in the gas chamber, due to the fact that much less waste gas is diverted through the port into the gas chamber than into the air chamber. Mr. Dyrssen, in his paper, shows that the elimination of the gas

The author is associated with the Celite Products Co., Los Angeles.

chamber by decreasing radiating surface and reducing the amount of water cooling necessary, considerably increases the amount of heat which can be delivered to the waste heat boiler.

Protects Furnace Foundation

Concrete, made by mixing insulating powder with 20 per cent Portland cement by volume, should be used approximately 4 inches thick in the base of the checker chambers and upon this should be laid a course of refractory. This concrete is capable of withstanding temperatures of from 1800 to 2000 degrees Fahr. and, in addition to saving heat, will protect the foundation of the chambers from excessive temperatures.

With the present commercial refractories available, the practicability of insulating the entire furnace is questionable. The temperature of the steel must be raised to 2900 or 3000 degrees Fahr. and the flame temperature is at least 200 degrees higher. The desire to increase the furnace output by increasing the flame temperature causes more rapid melting away of the lining. About 16 per cent of the heat supplied to the furnace is lost by radiation and convection from the combustion chamber and port ends, and the saving of a small proportion of this heat would represent an important fuel economy in view of the small part of the heat supplied which is actually utilized in producing steel. Insulation of the roof and walls would effect material fuel savings, as effective temperatures could be maintained in the melting chamber with a considerably reduced fuel consumption.

It is probable that the life of the roof brick used at the present time would be decreased by the use of insulation although the side walls, particularly below the top level of the bath, present a different problem. It is reasonable to assume that while the average temperature of the bath undoubtedly would be slightly increased at the point of contact with the lining, the serviceable age of the lining would be increased rather than decreased, due to the fact that the insulation would cause the temperature throughout the thickness of the lining to be more nearly uniform, thus relieving strains and stresses which cause cracking.

Fuel savings which could be realized by insulation of this portion of the furnace are sufficiently high to warrant a trial for the effect of insulation on the refractory life. To the writer's knowledge no tests of this kind have been conducted up to the present time. It should be borne in mind, however, that in suggesting the use of insulation in this portion of the furnace, it is not the intention to burn the same amount of fuel and secure an increased output, but rather to reduce the fuel consumption and maintain the same operating temperature.

In ordinary practice the bottom of the furnace is composed of three feet or more of second quality fireclay brick under the bath lining. Approximately 8 inches of insulating concrete would replace this large tonnage of second quality brick in the bottom at a much lower cost and would prevent conduction of heat into the foundation.

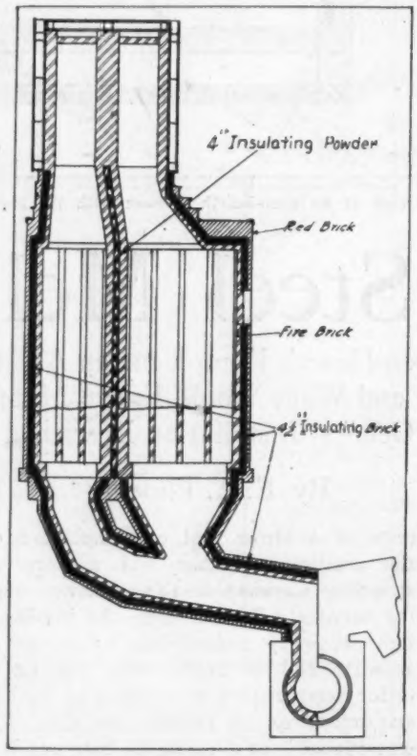


FIG. 2—PLAN VIEW OF OPEN HEARTH SHOWING METHOD OF INSULATING REGENERATORS

Approximately a year ago the Commonwealth Steel Co., Granite City, Ill., placed in operation a furnace in which considerable use was made of insulating material. This material was used throughout the base, side walls, tops and ends of the regenerators, throughout the outlet ducts to the stack, around the slag pockets up to the charging floor level, throughout the base of the slag pit and staggered around the wind box. The results were so satisfactory that this company recently has built two more furnaces which are thoroughly insulated.

At one of the large mills in Pennsylvania, a furnace was built with solid fire brick walls in the checker chambers. The time of melting steel was 10 hours. They then added a 4½-inch course of insulating brick on the outside of the checker chambers and were able to melt steel in 7 hours. This result also has been checked on another furnace in the same plant and all furnaces built by this company now are provided with thoroughly insulated regenerator chambers.

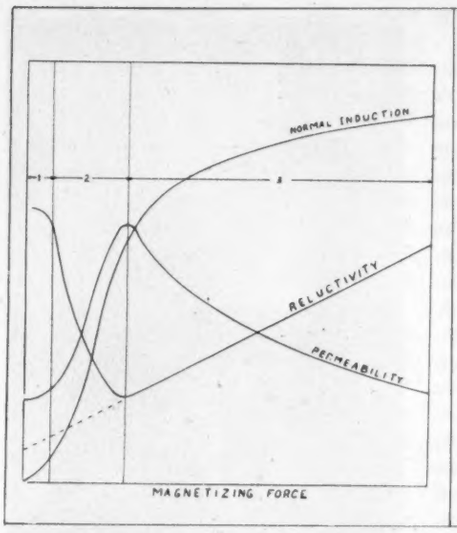
The radiation losses from uninsulated furnaces, regenerators and flues amount to at least 25 per cent of the total heat supplied, approximately two-thirds of which is from the furnace itself. The use of efficient insulating material will reduce heat losses approximately 70 per cent with only slightly increased first cost. The practicability of insulating roofs and side walls of the furnace proper at the present time is limited only by the refractoriness of the linings. If a more refractory lining is developed permitting the safe use of thorough insulation, the savings which could be effected in this way would amount to approximately 2,000,000 tons of coal per year throughout the industry in this country.

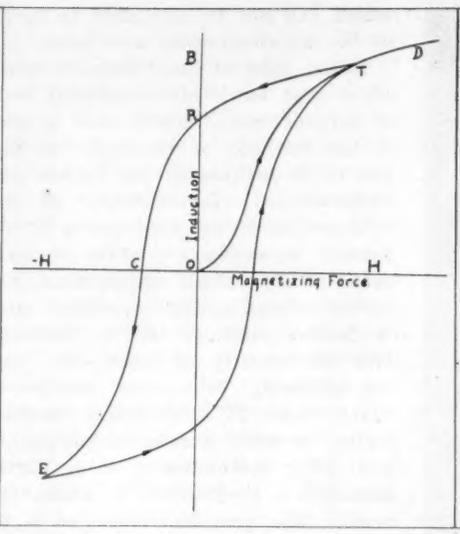
However, the insulation of the regenerative system will save over 5 per cent of the melting cost and this saving at least is now within the reach of every plant. Attendant advantages are minimizing of air infiltration; shorter time required for melting with resultant increased capacity; and improved working conditions on the charging floor above the regenerators.

Burns Wood Waste

To supply power to its large new drop forging plant, the Willys-Overland Co., Toledo, O., will use in combination with coal the wood waste from its body building plant. The coal will be burned on underfeed stokers under six boilers of 640 horsepower each. Chutes and a conveyor system will introduce the wood above the stoker fuel bed, as is now being done at the plant of the Fisher Body Corp., Detroit, where similar stokers are used. The latter plant, which has four boilers of 750 horsepower each, is two years old and has shown that burning wood waste by this method is entirely practicable.

It is planned to operate the Willys-Overland boilers at an average rating of over 200 per cent. When necessary they can be forced to nearly 300 per cent to take care of peak loads. Stokers of this type respond quickly to sudden demands for steam, a feature which adapts them to plants of this kind.





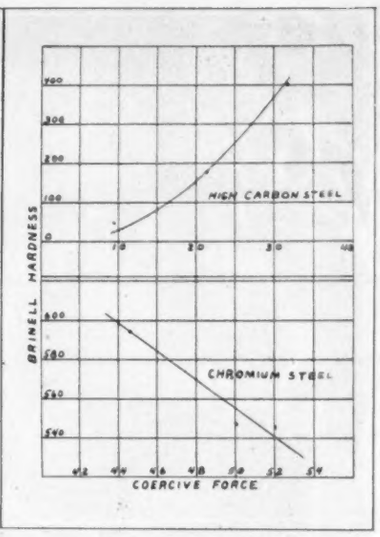


Fig. 1—Relation of magnetic induction, permeability, and reluctivity to the applied magnetizing force. Fig. 2—Illustrating magnetic hysteresis. Fig. 3—Relation between coercive force and mechanical hardness for two types of steel

Magnetic Analysis Needs More Study

By Raymond L. Sanford

MAGNETIC analysis is one of the most interesting as well as one of the most tantalizing subjects of physical research. The desired results always seem to be just around the corner. The subject is not a new one, even in its practical aspect, for over 40 years ago William Metcalf, then president of the American Institute of Mining Engineers, presented a paper entitled "Can the Magnetism of Iron and Steel be Used to Determine Their Physical Properties." This excerpt is significant:

"There are so many parallels between the action of magnetism on iron and steel and their behavior under different processes of manipulation that it would seem as if there must be some connection between the forces at work in the different cases, if, indeed, there be not an identity of force in all of these cases."

The question of the interrelation between the magnetic and mechanical

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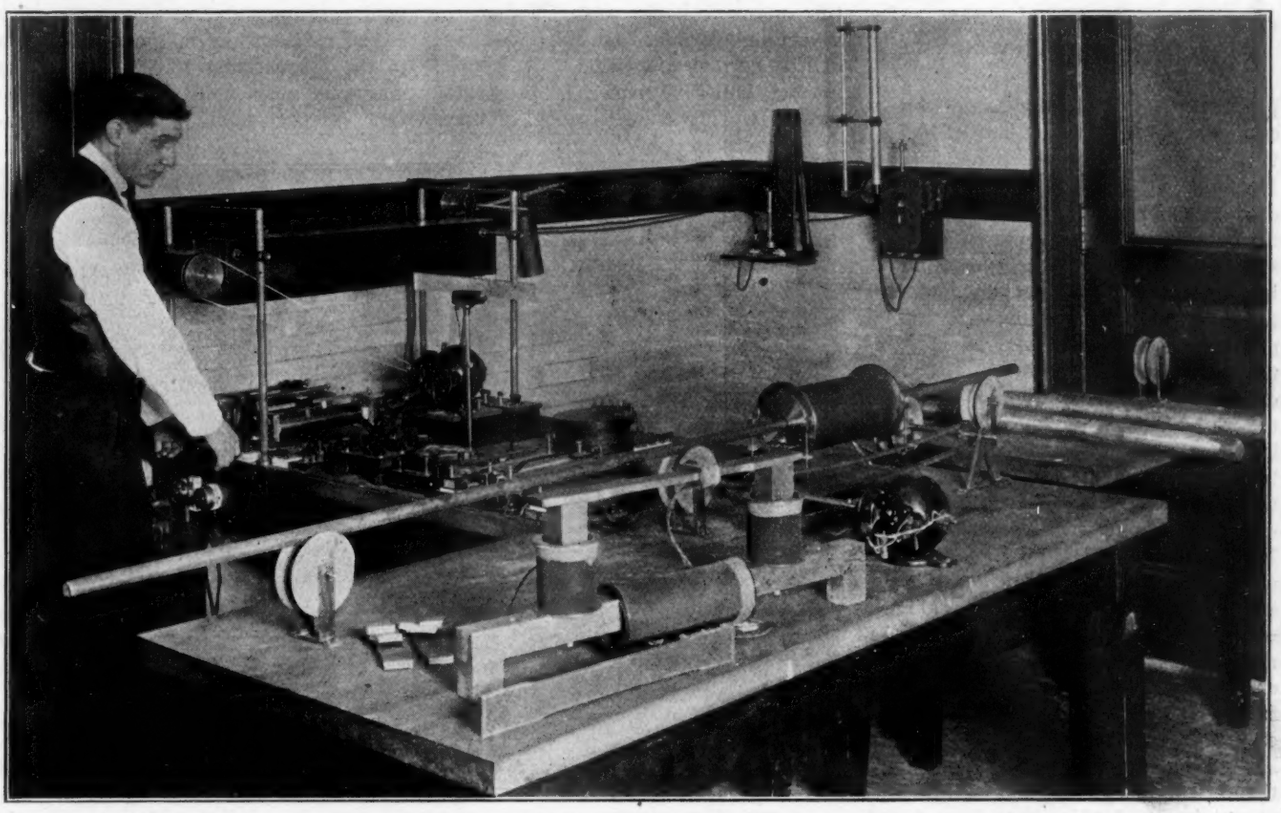


FIG. 4—TYPICAL APPARATUS USED FOR MAGNETIC EXPLORATION

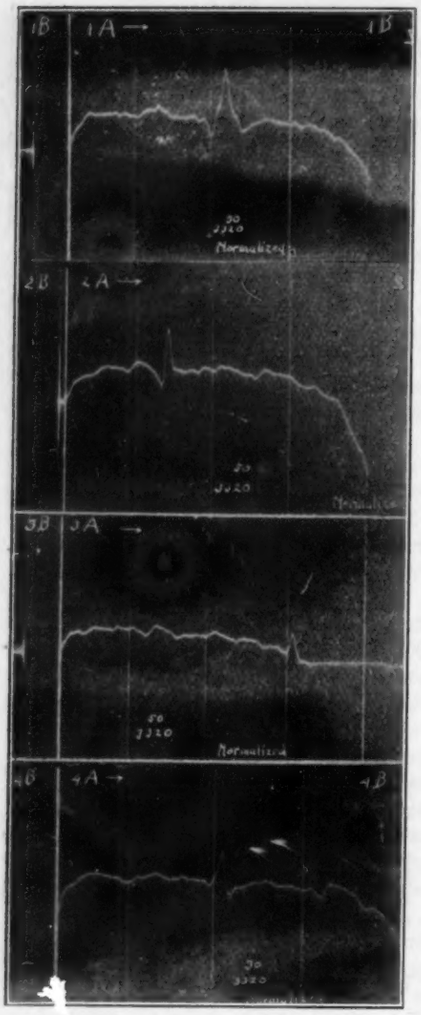


FIG. 5—RESULT OF A MAGNETIC EXPLORATION OF FOUR STEEL BARS

properties of iron and steel on a quantitative basis has baffled investigators even up to the present time. Hundreds of investigations have been carried out and evidence confirming the general correspondence of the two sets of properties has been accumulated until there can be no doubt as to their common origin, and yet no definite quantitative law of correlation has been established. The very evident complexity of the subject from the fundamental point of view has led to a concentration of effort, to a large extent, upon problems of practical application based upon such general relationships as have been found. Numerous experiments have led to developments of definite practical utility, but it is worthy of note that, in nearly every case, the value of the results has been limited by the lack of adequate information as to the fundamental principles involved. Not only are the benefits to be derived limited by this lack of an adequate theoretical foundation, but certain apparent inconsistencies have been found which can not be explained in terms of the information we now have.

In the light of these facts, it is obvious that much investigational work of a fundamental nature must be done if the methods of magnetic analysis are to be utilized to the fullest possible extent. Investigators in this field are somewhat handicapped by the present unsatisfactory state of magnetic theory which necessitates procedure along purely empirical lines. A further difficulty lies in the relative insensitivity of mechanical testing methods. It is easily possible in many cases to differentiate magnetically between specimens which do not differ mechanically to a degree sufficient to be detected by mechanical tests. The practical value of a reliable and inexpensive nondestructive testing method would be so great, however, that the expenditure of a considerable amount of time and energy in the study of the fundamental principles is entirely warranted.

The reactions of iron and steel to the influence of magnetic force are of a rather complex nature. The magnetic induction B is not directly proportional to the applied magnetizing force H, depending not only upon the value of the magnetizing force but also upon the previous magnetic history. If a certain standardized procedure is carried out, however, consistent and reproducible results are obtained which are characteristic of the material under test. Values of induction obtained in this way are called normal induction. A typical normal inductive curve is illustrated in Fig. 1. The curve consists of three

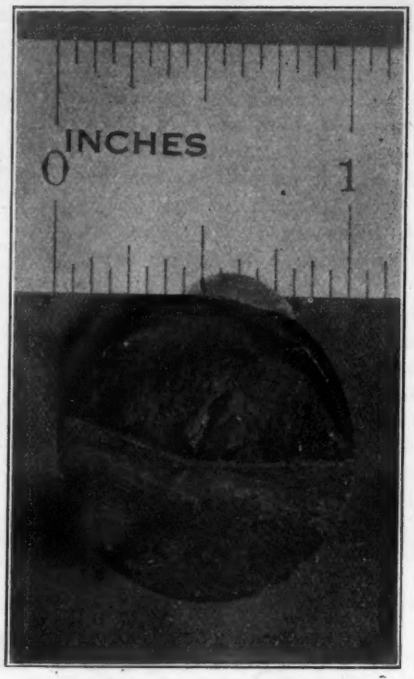


FIG. 7—FLAW IN A STEEL BAR DETECTED AND LOCATED BY MAGNETIC METHODS

more or less distinct stages, as indicated in the figure. As the magnetizing force is increased from zero, the induction increases at a relatively slow rate. In the second stage, the increase of induction with magnetizing force is much more rapid. The curve is relatively steep. In the third stage, the induction increases at a continually decreasing rate, as shown.

The ratio of the magnetic induction to the magnetizing force is called the magnetic permeability μ. The variation of permeability with magnetiz-

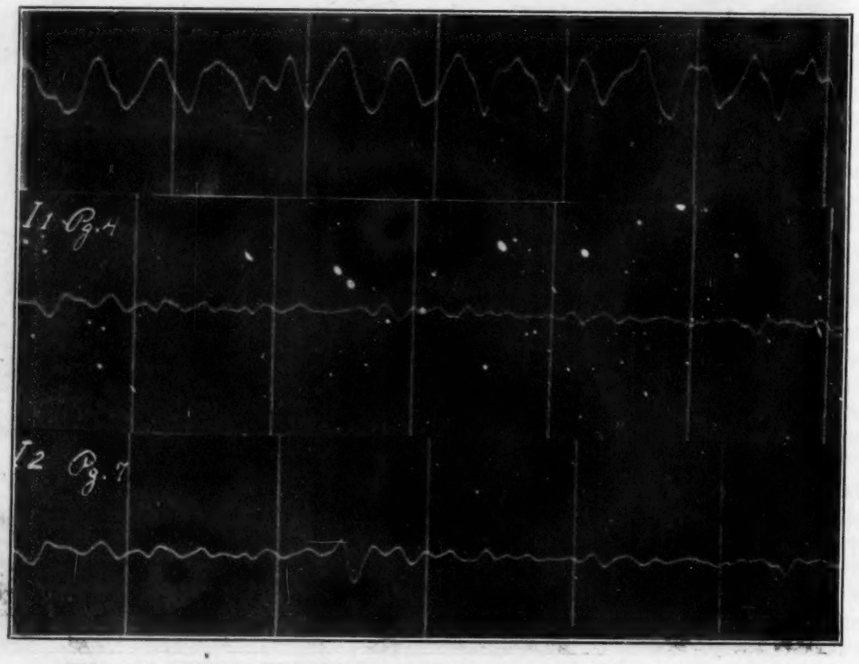


FIG. 6—MAGNETIC UNIFORMITY CURVES OF COLD ROLLED MATERIAL

ing force is shown by the curve marked "permeability." This curve has certain characteristics or critical points which will be considered in more detail later. The inverse of magnetic permeability is called magnetic reluctivity ρ and the reluctivity curve is also shown in the figure. The reluctivity curve is very valuable for defining the magnetic properties, especially within the third stage of magnetization.

The process of magnetization is not reversible. If the magnetizing force is reduced in value from any point on the normal induction curve, the induction does not follow the curve in reverse order. The decrease in induction lags behind the decrease in magnetizing force and even when the magnetizing force has been reduced to zero some induction still remains. It is this phenomenon which makes permanent magnets possible. The value of induction remaining after the magnetizing force has been reduced to zero from a given maximum value is called the residual induction, B_r. It is necessary to reverse the direction of the magnetizing force in order to reduce further the magnetic induction. The value of the reversed magnetizing force necessary to reduce the induction to zero is called the coercive force H_c and is a measure of the tenacity with which the magnetism is retained. Materials having a low coercive force make poor permanent magnets.

If the magnetizing force is varied cyclically from a definite positive value to an equal negative value and back again, a characteristic closed figure is obtained called a hysteresis loop. A typical hysteresis loop is shown in Fig. 2. The point T representing the normal induction corresponding to the maximum value of magnetizing force is the tip of the loop. The residual induction is at point R and the coercive force at point C. The area of this hysteresis loop is proportional to the energy required to take the material through a complete cycle.

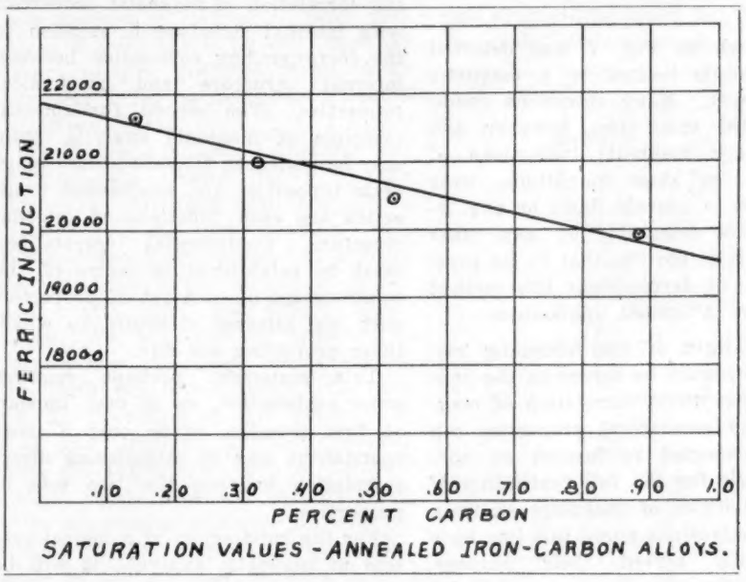
For the complete characterization of a material in terms of its magnetic properties both the normal induction curve and hysteresis loop are required. As a rule this is not convenient and it is customary to compare the properties of materials in terms of certain critical values, which may be termed magnetic "characteristics." Referring to the permeability curve in Fig. 1, it will be noted that the permeability has a definite value at zero magnetizing force. This value is called the initial permeability, μ_0. Another critical point on the permeability curve is the maximum permeability μ_{max}. The characteristics of the reluctivity curve will be referred to later. The characteristic points on the hysteresis loop Fig. 2, are the maximum induction B_m, residual induction B_r, and the coercive force H_c.

These characteristics and various combinations of them have been mostly used in the endeavor to correlate the magnetic properties with mechanical properties. There is another characteristic which is of value. This is the saturation value; the maximum value toward which the ferric induction B-H tends. It is a measure of the number of elementary magnets (magnetons) in a unit volume of the material.

If magnetic characteristics are to be used as criteria of the mechanical properties or quality of steel, certain fundamental principles or laws of correlation must be made use of and fundamental research in this field has as its primary object the discovery and formulation of such principles or laws. The statement of Burrows that "there is one and only one set of mechanical characteristics corresponding to a given set of magnetic characteristics, and conversely there is one and only one set of magnetic characteristics corresponding to a given set of mechanical characteristics" implies the existence of definite and direct relationships between the two sets of properties and the problem of discovering them would appear to be a rather simple and straightforward one. To the best of the author's knowledge, however, no universally applicable law of correspondence has been formulated even for steel of a simple chemical composition.

One or two apparent inconsistencies may be of interest in this connection. The one magnetic characteristic that has been generally regarded as varying directly with mechanical hardness is the coercive force and this relation generally exists. On the other hand, it has been found, in certain cases, that the coercive force decreases with an increase of hardness. The two conditions are illustrated in Fig. 3. The data for the upper curve are taken from published results of Burrows and Fahy and those for the lower one from a paper by J. A. Mathews.

In another connection, methods have been devised for the detection of flaws and imperfections by magnetic exploration. In these methods it has been assumed that variations in mag-



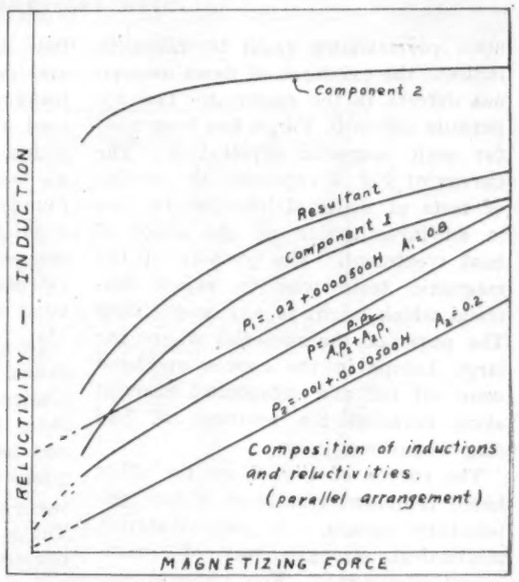


FIG. 8—RELATION OF MAGNETIC SATURATION TO CARBON CONTENT—FIG. 9—COMPOSITION OF INDUCTIONS AND RELUCTIVITIES

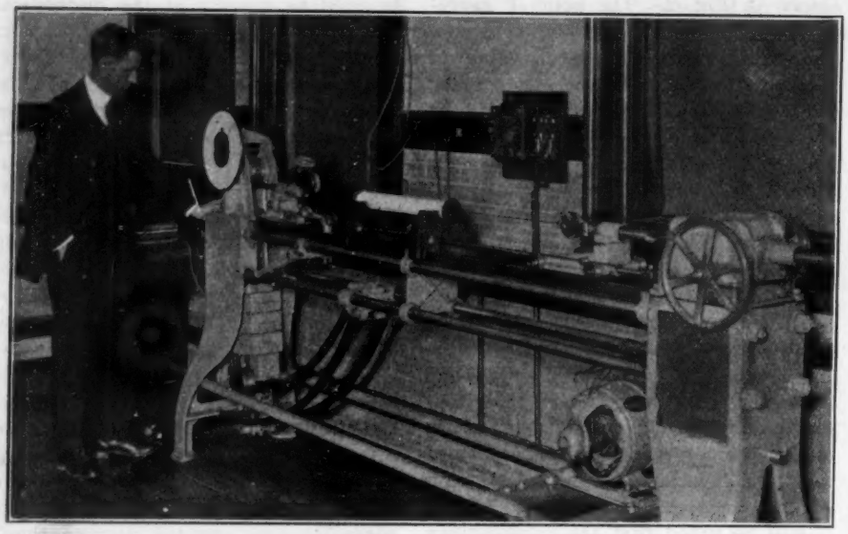


FIG. 10—APPARATUS FOR THE STUDY OF THE EFFECT OF STRESS ON MAGNETIC PROPERTIES

netic permeability could be taken to indicate the existence of flaws or serious defects in the material. The apparatus shown in Fig. 4 has been used for such magnetic exploration. The curves of Fig. 5 represent the results of tests of material intended for use in an investigation on the effect of heat treatment. The purpose of the magnetic tests was to reject material which might in any way vitiate The parts of the material where the large humps in the curves appeared were cut out and subsequent examination revealed the presence of bad slag inclusions.

The curves of Fig. 6, on the other hand, represent results of a less satisfactory nature. In this material, mechanical strength was of paramount importance. The material represented by the upper curve would seem to be very nonuniform, to say the least, and would probably be rejected on the basis of the magnetic test. In an actual service test, however, the material showed no signs of weakness and the irregularity of the magnetic curve was later associated with stresses set up during the rolling operation. Another sample of the same type of material, whose magnetic curve was fairly smooth (shown in the second curve of the figure) was intentionally injured at one point in such a way as to seriously impair its strength. The corresponding effect on the magnetic indication is shown in the lower curve. It is seen that this really serious defect produced a definite magnetic effect but of smaller magnitude than did the small irregularities in stress distribution along the length of the other sample. In other words, the method in its present form fails from the standpoint of reliability. The flaw shown in Fig. 7 was detected and definitely located by a magnetic leakage test. Many specimens examined at the same time, however, and which gave magnetic indications of at least the same magnitude, were found not to contain flaws or any irregularities detectable by any other means. It is obvious that in its present stage of development this method must have a limited application.

In the light of the foregoing evidence, one must be forced to the conclusion that direct correlation of magnetic with mechanical properties can not be expected to furnish an adequate basis for the full realization of the possibilities of magnetic analysis. The investigations along this line have undoubtedly served their purpose, however, for they have not only led to the development of practical applications of definite commercial value but they also amply warrant the statement that any treatment which measurably alters the mechanical properties of a given piece of steel at the same time alters its magnetic properties. This proposition, however it may be stated, may be considered as the first fundamental principle of magnetic analysis.

This general principle, to which no exception has yet been discovered, would appear to justify the conviction that certain definite physical laws underlie the relationship between the two sets of properties. Since direct correlation between the properties has failed to reveal these laws, another principle must be invoked. Magnetic properties, in common with mechanical properties, must be functions of the internal structure. The logical approach to the problem, therefore, would appear to be through the correlation of magnetic properties with internal structure in relation to the corresponding correlation between internal structure and mechanical properties. The second fundamental principle of magnetic analysis, then, may be stated as follows: Since magnetic properties and mechanical properties are each functions of internal structure, fundamental correlations must be established in terms of the relationships of each set of properties with the internal structure to which these properties are due.

This statement perhaps requires some explanation, as it may appear, at first thought, to be only a more roundabout way of establishing direct correlation between the two sets of properties.

For the building up of a logical system of magnetic analysis, it will be necessary, therefore, to study first the magnetic and mechanical properties of pure iron and the effect on them of various conditions, such as crystal size, mechanical strain, the presence

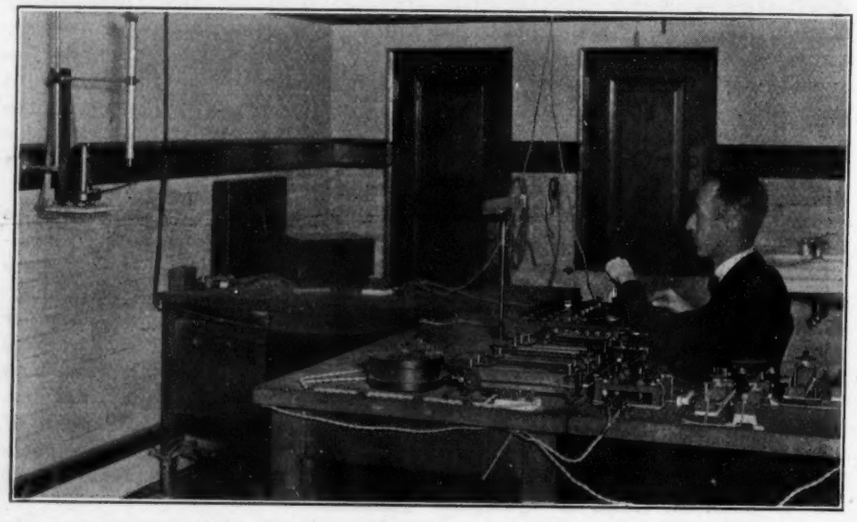


FIG. 11—CONTROL APPARATUS FOR STUDYING THE EFFECT OF STRESS

of the impurities commonly found in commercial steel, and so forth. This is a very difficult field of research as the variables are not easy to control. It is known, for instance, that mechanical stress has a profound influence on magnetic properties and the effect of exceedingly small quantities of dissolved carbon is out of all proportion to what might be expected.

The effect of carbon depends upon its mode of association with the iron, whether it is free or combined, in solid solution or precipitated. A large part of the difficulty in the setting up of such a system will be found in the determination of internal structure and the effect upon it of the various factors already mentioned. In this connection, X-ray analysis has already proved exceedingly valuable and more may be expected of it as further developments are made. It can easily be seen that the problem is one requiring the co-operative effort of the

(*Continued on Page* 595)

Makes Steel from Unselected Scrap

By Sterling H. Bunnell

TO PRODUCE steel castings of electric furnace quality at open-hearth furnace cost is the purpose of a company which is introducing in this country a new type of furnace. Developed in Germany, the new furnace is claimed to have produced a good grade of steel castings from ordinary unsorted scrap which averages much poorer than unsorted American scrap.

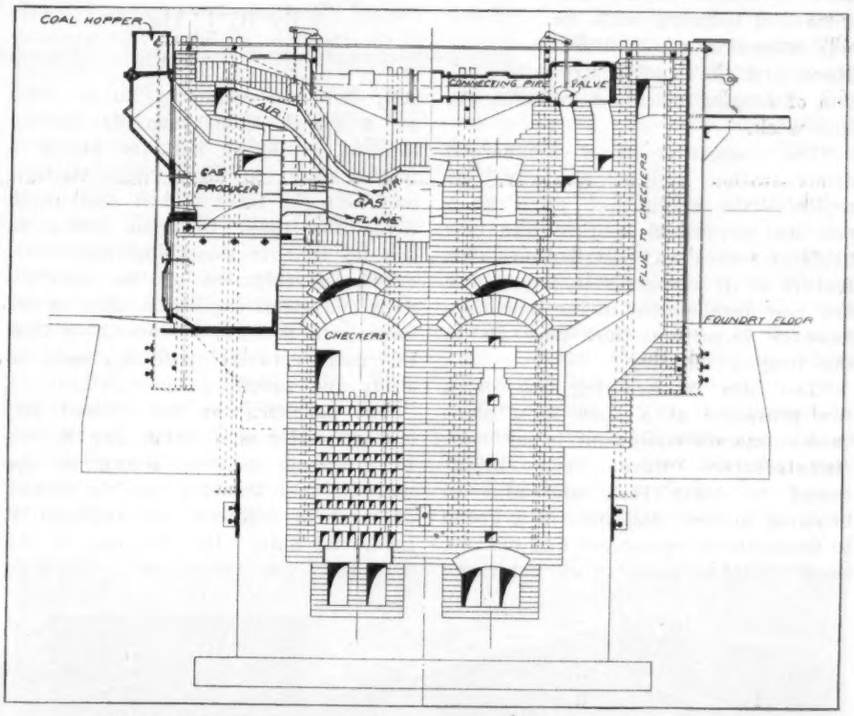
The furnace is being introduced and built in the United States by the American Bosshardt Furnace Corp., New York. As may be seen from the accompanying illustration, a cross sectional sketch, the furnace is of the open-hearth type, but differs essentially from the ordinary open-hearth furnace by the close connection of the producers which furnish the gas for the operation of the furnace. A coal gas producer is built integral with the furnace at each of its two ends. Each producer is connected with the melting chamber by a short and direct port, shown just above the grate of the producer; also by a second port, near the top of the producer, and further, by ports leading to the cast iron pipe shown above the top of the furnace. The cast iron pipe connects with the upper part of the producer at the other end of the furnace. Valves provided in this pipe are the means by which the flow of gas may be reversed. The reversing is done simultaneously with the general reversal of the furnace by means of the usual reversing valve provided at the junction of the furnace flues near the base of the chimney.

Below the furnace are the usual regenerators or checkers. Operation of the furnace is as in usual practice, gases from the furnace passing through suitable flues to one of the two checker chambers, thence by a flue at the base of the checkers to a reversing valve near the chimney. The inlet for air to the furnace is through the same reversing valve as usual, thence by the other furnace flue to the bottom of the other checker chamber, thence upward to the air inlet flue shown above the gas flues leading from the producer to the chamber.

In operation, the flaming gas from one of the producers enters the furnace through the lower flue just above the grate, and meets the gas from the top of the same producer, entering through the flue next above, and reinforced by a further supply of gas from the top of the producer at the other end of the furnace, led around through the cast iron pipe as explained. All the heat generated in the producer is thus available in the form of heat in the producer gases entering the furnaces. The air for combustion is supplied from the previously heated checker chamber through the uppermost of the three flues, and thus enters the furnace above the gas. The flue gases and heated air mingle and combine at high temperature, the flame rolling along over the bath of melting steel below. The result of this intimate mixture of flaming gas and heated air is the production of a temperature in the steel of over 3500 degrees Fahr. and temperatures as high as 4000 degrees Fahr. are easily reached if desired.

The high temperature produced in this furnace as compared with electric furnace practice does not, as might naturally be supposed, damage the roof of the furnace so as to cause it to have a short life. This is due to the peculiar concave construction of the top of the furnace, and to the blanketing effect of the air entering through the sloping intake port. The highest heat of the flame thus does not come in contact with the roof of the furnace.

The first two of these furnaces in this country now are under construction at the plant of the Wanner Malleable Castings Co., Beloit, Wis. Each will be of 3 tons melting capacity per charge, or about 18 tons per day if continuously operated.



CROSS SECTIONAL VIEW OF NEW TYPE STEELMAKING FURNACE

The author is a consulting engineer, 347 Madison avenue, New York.

Bringing Your Customers To Your Plant

HOW AN OHIO BUILDER OF FORGING MACHINE EQUIPMENT STAGED HIS OWN EXHIBITION—AND GOT 1500 TO COME!

By A. J. Hain

WHAT, in your opinion, is the most interesting or important feature of this exposition?" The question was asked a leader of the machine tool industry while he was attending the National Machinery Co.'s demonstration of forging machines in Tiffin, O., last week.

"The exposition as a commercial demonstration by one company," he replied; "the significance of it as a new and successful venture into new fields of selling and distribution. This feature of it surpasses in importance any new development in the machines, however important that may be to the forging industry.

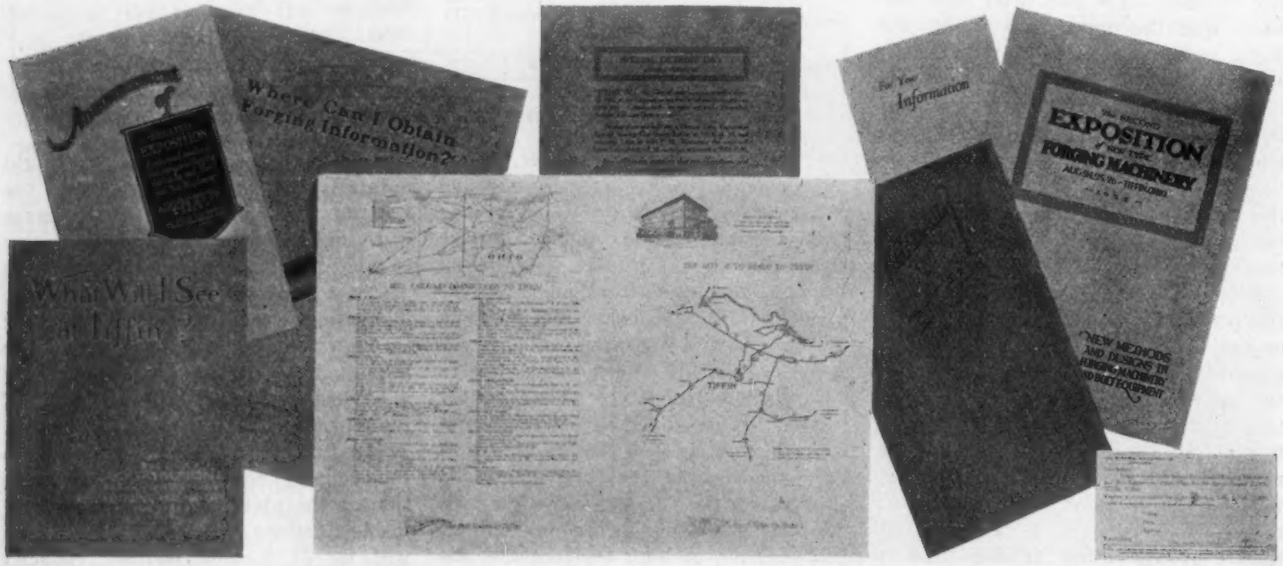
"The idea of bringing one or a few prospects at a time to a plant to demonstrate equipment is not new. Manufacturers have been accustomed to doing that, and also to bringing in their salesmen in a group to demonstrate equipment and instruct them. But, to bring in all your customers and prospects at the same time, keep open house for them, demonstrate everything you have to sell; for one company to do this on a grand scale, turn its factory into an exhibition hall for nearly a week's time; to fill it with visitors, and to make them feel it was worth while for them to come miles to see it; that is something new.

"The development of the one-company industrial exposition idea, as we have seen it here, is something that all manufacturers will do well to study and watch."

The speaker who thus "sized up" the exhibition the fourth day it was in progress is well known in the machine tool industry for his studies of business methods and analyses of industrial data. He was one of the spectators who viewed the event from the standpoint of future business possibilities and applications.

The value of the forging and bolt and nut making machines on display was said to be a half million dollars. The cost to the company for the exposition, including the expense of providing accommodations for its guests, is understood to have been $50,000 or more. The company did not put on "a show" or indulge in extravagant entertainment. A buyer who said he had just placed an order for a forging machine told a friend that on the first day of the exhibition the company booked "on the floor" orders for $60,000 worth of machinery.

The company began preparations for the exhibition weeks in advance. In advertising the event direct mail literature was used to "tie in" with trade journal advertising. A half dozen sets of direct mail literature were issued at intervals, gems of the printer's, engraver's and paper maker's arts. They were dignified in their


Where Can I Obtain Forging Information?
What Will I See at Tiffin?
For Your Information
EXPOSITION
FORGING MACHINERY
NEW METHODS AND DESIGNS IN FORGING MACHINERY AND BOLT EQUIPMENT

Some specimens of the direct-mail literature used by the company in extending personal invitations to its guests

expressions, emphasized the spirit of progress, and extended cordial invitations. They explained the purpose of the exhibition, gave a brief description of the machines that were to be exhibited, and full details of how the visitor could make the trip most conveniently from his particular location, and what was being done to provide for his comfort while in Tiffin. The direct mail invitations carried the intimate, friendly, personal note; while the trade journal advertising served to keep displayed before readers the importance of the exhibition for all those engaged in the forging industry, the prestige of the exhibitor, the time and the place.

The response to the appeal was, to use the expression of one of the officials of the company, "extraordinary." It was "wonderful"; it surprised even those who planned it. It made it necessary for the company to extend the time for the exhibition from three days to five, and to draw more extensively than anticipated on the town's resources for accommodating its visitors.

The company "took over" Tiffin's principal hotel, and operated it for the convenience of its guests. There was no charge for rooms or meals. A guest went into the barber shop for a shave, and when the barber had completed the job and he was about to pay for it, the barber raised a forbidding hand. "It was paid for!"

The visitor had his shoes shined. that, too, was paid for. He strolled to the hotel entrance; a gentleman stepped up to him and asked him "Where would you like to go?" A half dozen taxicabs were lined up along the curb, to take him to the company's plant, to whisk him out to the golf links, or to drive him around the town.

The hotel with rooms for 250 guests was not large enough to accommodate all the visitors, so the company obtained the use of the Heidelberg college dormitory, Williard hall, a large, beautiful gray stone building, with accommodations for 90. Rooms for others were found at the new Y. M. C. A. building.

The number of new guests each day as reported by those in charge of the registration averaged 250 to 300. A day or two was sufficient for most of them to see the exhibition; some of them stayed longer. Quite a few of them motored to Tiffin as a vacation trip, while a special train engaged by the company brought a large delegation from Detroit.

The exhibition was announced to begin Monday, Aug. 24, and to continue through Tuesday and Wednesday. However, the Railroad Master Blacksmiths were in convention in Cleveland, and 250 of them went to Tiffin on Friday in the week preceding. On Monday nearly 500 visitors attended the exhibition; 300 to 400 daily were added to the registration lists on Tuesday and Wednesday, and Thursday, the Detroit Day special brought in a large quota. The company had 1500 stamped metal badges to identify visitors, while its principal employes and officials wore large celluloid buttons. The supply of badges was exhausted before Wednesday, and a large number of printed bits of ribbon then were used.

On the front lawn of the plant grounds, shaded by many trees, the company had arranged chairs and tables where the visitors seated themselves and talked over features of the exhibit. At one side of the lawn a tented stand had been erected, for serving coffee, soft drinks, sandwiches, ice cream, candy and cigars. One day some of the visitors played a ball game on the company's grounds adjoining the plant.

In front of the office another fleet of taxicabs was drawn up for immediate use of the visitors. At the entrance of the main plant, which also served as the exhibition hall, were three information clerks. In the plant was a large stand with attendants dispensing lemonade and cigars.

The exhibition was well lighted by means of overhead sash, and though a half dozen oil-fired furnaces were used in heating material for demonstration purposes the heat was quick-

View down the main bay, from bolt and nut plant

A section of the exposition showing a battery of high-duty forging machines demonstrated.

A group viewing the demonstration of a 5-inch high-duty forging machine

ly dispersed, and the spectators could be within a few feet of the machines without discomfort.

"Our first exhibition of this kind was held 15 years ago," said the company's president and general manager, E. R. Frost. "It was on a much smaller scale; we had about 300 visitors here at the time. It is gratifying to us to note that quite a number of those who were with us then are attending this exhibition. We also are impressed by the fact that most of those who are attending this exhibition are men who occupy the higher executive positions in their companies; they are the managers, the chief engineers, and those who are in authority, just the men to whom we want to demonstrate our machines. The response in this regard has been especially gratifying."

Two visitors came from San Francisco to see the exhibition; more came from the New England states and from Canada. Among those who attended were W. T. Sharte, of Bauer & Sharte, one of the largest companies manufacturing bolts in Germany, and L. Parent, of Fenwick Freres, machine dealers, France.

The interior of the company's plant presented a striking appearance; the arrangement, the machines, the crowd, in a spacious, well lighted, well ventilated building suggested the machinery hall of a world's fair.

The machines were placed on both sides of a center aisle down the length of the building. Each was manned by a skilled operator, demonstrating or ready to demonstrate his machine. Lined up with the machines, down the aisle, at intervals were the furnaces, with stock heated for use.

Back of these rows of machines and furnaces were the large milling machines and other equipment regularly used in the plant. Many of them were in operation, so that a visitor might see details of manufacture, and a few steps away witness the machines in operation. Several hundred specimens of forgings were exhibited at one end of the hall, many of them having been contributed for the purpose by the users of the company's forging and bolt making equipment.

The exhibit was divided into two groups, the first featuring 36 headers and forging machines, 17 of them being in operation, and the second group including 62 machines used in preparing stock or finishing, many of them also being shown in actual work.

The machines in the first group on which the company is specializing are six sizes, 1-inch, 1½-inch, 2-inch, and up to 5 inches, of high duty forging machines.

Semi-hot continuous automatic feed rivet and bolt headers, in three sizes, ⅝-inch, ⅞-inch and 1-inch, making bolts and forgings at high speed, 120, 150 and 200 per minute.

A 1-inch high duty header, making two-blow bolts, shown in operation with an electric heater feeding blanks to the operator automatically.

A 1-inch and a 1½-inch semi-automatic hammer bolt header.

The second group included a 1-inch automatic bolt trimmer, trimming both square and hexagon nuts.

A 1-inch and 1½-inch center feed machine for square and hexagon nuts.

Three semi-automatic burring machines, ¾-inch, 1¼-inch and 2-inch.

A 1-inch eight; 1½-inch ten; 2-inch six and 2-inch 12 spindle semi-automatic nut tapper.

Automatic nut tappers, the smallest adapted to No. 2-56 radio nuts and the largest a ¾-inch nut according to the specifications of the Society of Automotive Engineers.

Three sizes of bolt pointers, 1-inch 1½-inch and 2-inch, for round and cone pointing, and a ½-inch and a ¾-inch gimlet pointer.

A battery of rapid and open die bolt cutters, roll thread machines, vertical shears and washer machines also were included in this assembly.

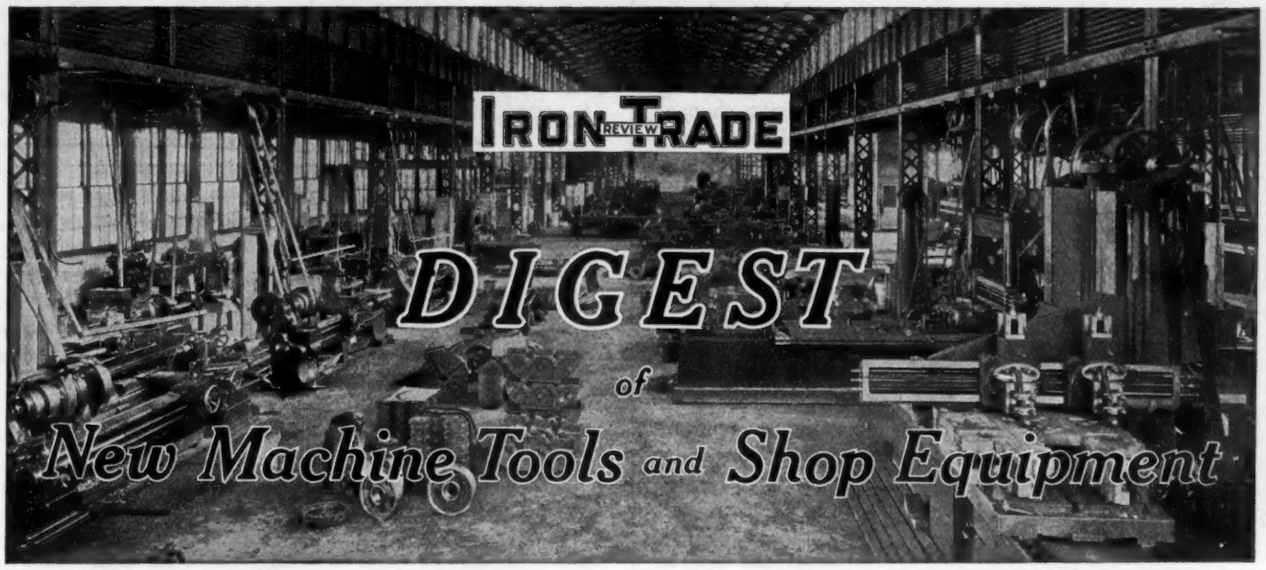
On each machine there was a placard, giving the name of the machine, the size of the product, and principal features. A box contained leaflets with illustrations and written description of the machine. The company was careful about planning this detail on the assumption that the visitor would want to take with him not only the visual impression, but the full description for future reference. Some visitors were seen standing before the machines, watching the operations and making notes on the leaflets—and not to impose any obstacles the company gave them nickel plated pencils as souvenirs.

The demonstration of the forging machines showed their wide range of uses, and the greater accuracy of the product. Fewer operations are required for difficult forgings, and the machines gather a greater amount of unsupported stock in making successfully certain products heretofore not consdiered suitable for forging.

One of the distinctly new machines that attracted special attention was a ⅜-inch semi-hot automatic feed header, demonstrated in making carriage bolts at the rate of 200 per minute. This machine is capable of producing 72,000 such bolts in six hours. Unusually long die-life and clean product are features.

For the continuous operation the company is making a coiler and welder, that takes the original coil of wire stock, unloops it and loops it again in larger rings and feeds it through the furnace and to the heading machine. When one length of coil is exhausted, another is electrically welded to the end, so that several miles of wire can be fed through the furnace in a day's operation.

The furnace used in this demonstration was designed by A. R. Spencer, combustion engineer, Cleveland. One of the points claimed for the semi-hot method of making forgings of various descriptions is that special annealing is not required, the life of the dies is prolonged, and the product is free from scale. The new machines will be described in detail in subsequent issues of IRON TRADE REVIEW.



Selling Production Sells Tools

Obsolete Machine Tool Equipment Is Being Replaced by Modern—Coming Expositions Are Attracting Attention of Tool Users—August Sees Few Announcements of New Machinery

MODERN equipment is easier to sell today than it was a year ago, or two years ago, according to reports of manufacturers and dealers. The reasons assigned for this are that restricted immigration, keen competition and a drive against obsolete equipment are creating a demand for better machinery. This is but another way of saying that purchasers of tools are buying production and dealers are selling production. Industry is demanding that production costs be pared to the lowest practicable limit without a sacrifice of quality, and this demand frequently can be satisfied by replacing obsolete equipment with the latest high output units. This explains perhaps why new equipment is enjoying a little better demand than used.

Despite the increasingly better machine tool business done, August proved to be the dullest month of the year so far as announcements of new tools is concerned. As was explained in last month's Digest, this is due to two reasons: First, the summer vacation months always show fewer tools announced; and second, a number of manufacturers withhold announcements until the opening of several of the fall expositions where machine tools are shown.

Since two of the important exhibitions are to be held this month, it is expected that several new machines will come to light. From Sept. 8 to Sept. 11, the annual New Haven machine tool exhibition will take place at New Haven, Conn., and, being larger than ever before, it is expected to be of considerable interest to eastern machine tool users. At the seventh annual steel exposition of the American Society for Steel Treating to be conducted in Cleveland, Sept. 14-18, a most complete line of machine tool equipment is to be displayed and operated. In past years this feature of the exposition has proved particularly attractive to machine tool consumers.

Many Machines Redesigned

Of the few machine tools announced during August, it is interesting to note that several were redesigned tools and not complete new units. This indicates that manufacturers are awake to the fact that in order to keep their products in the competition, constant effort must be directed toward modifications which will increase capacities and speeds. In August two manufacturers of milling machines announced modified designs, one of the modifications affecting two machines.

In No. 170 of the accompanying digest, the Cincinnati Milling Machine Co. describes the line of plain and universal millers incorporating new productive features. Tapered roller bearing having been supplied in the spindle drive to increase efficiency and add to the cutting capacity. A new pyramid form column provides the strongest kind of a support for the knee, saddle and table and in addition improves the appearance of the machine. This pyramid column also serves to enclose the main drive motor when a self-contained motor drive is desired. Feed and speed changes are made for the normal operating position at the front of the machine, making it easy for the operator to select the proper feed and speed to maintain maximum cutting speed.

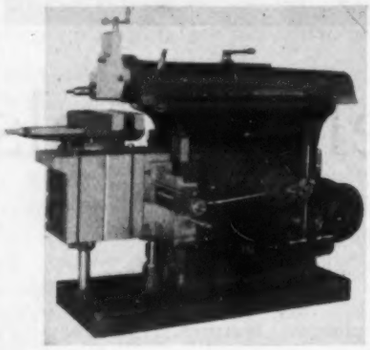
A rectangular overarm eliminates the necessity for braces and is easily moved in and out of position by means of a pilot wheel. Arbor supports are strong but light and easily placed in position. Swinging dogs permit the engagement of the feed, forward and reverse without running off the dogs by hand.

Another machine redesigned by the Cincinnati Milling Machine Co., is described as No. 176. Operating convenience is one of its features. For instance, the power quick traverse on the plain machine is operated by a single lever at the front of the saddle after the positioning lever is located. The table travels at 100 inches per minute in either direction by moving the single lever to the right or left.

Shaper Has Constant Speed Drive

No. 168

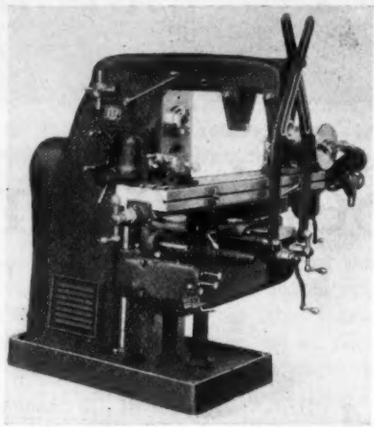
The Rockford Machine Tool Co., Rockford, Ill., has announced the addition of new features to its constant speed drive shaper, for both convenience of control and compactness. The shaper will be built only as a single pulley drive, eliminating countershaft and belts. However, this pulley drive can be converted into motor drive by removing the friction pulley and replacing it with a stock friction gear and rawhide pinion. The motor is mounted on the finished surface on the rear of the column. Speed transmission gears are assembled into the column, and changes are selected from the operator's side of the machine. Only gears in use are in mesh. The feed has been changed from crank motion to direct drive type, fully involved in the bull gear hub. Feeds are selected through a convenient dial which provides 25 changes from 0.008 to 0.5 inch evenly spaced. The feed is controlled through a hand lever at the operator's position and an automatic stop is added to safeguard the work and machine. Semisteel rocker arm, and angular ways on the ram with a simplified method of adjusting for wear, are added features.



Miller Employs Roller Bearings

No. 170

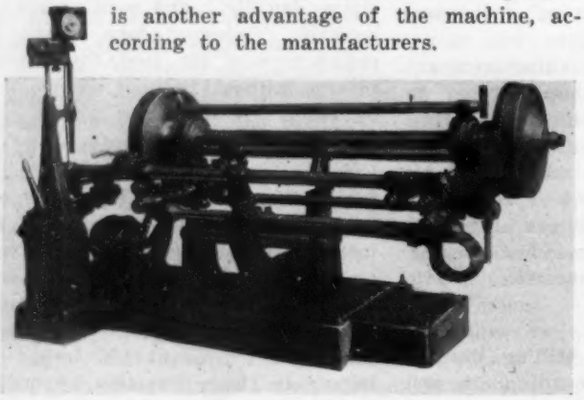
The Cincinnati Milling Machine Co., Cincinnati, is introducing a new type milling machine with tapered roller bearings in the spindle drive. It is claimed that these bearings increase the machine's cutting capacity. The pyramid form column, arranged to enclose a main drive motor, is interchangeable for overhead belt drive. The motor is well ventilated, with provision to facilitate oiling and for adjusting the brushes. The entire driving mechanism of the machine is automatically oiled. The chrome nickel steel spindle has an extra large diameter bearing. Narrow guides, giving smooth and uniform cross adjustment, are designed for accurate boring. Centralized oiling is provided for mechanisms within the knee, saddle and table. Location of the feed box in front of the knee makes for convenient feed selection, as the machine is controlled from the front. Safety features include automatic spindle stop and feed mechanism protected by automatic safety clutch which slips under sudden overloads.



Machine Corrects for Unbalance

No. 169

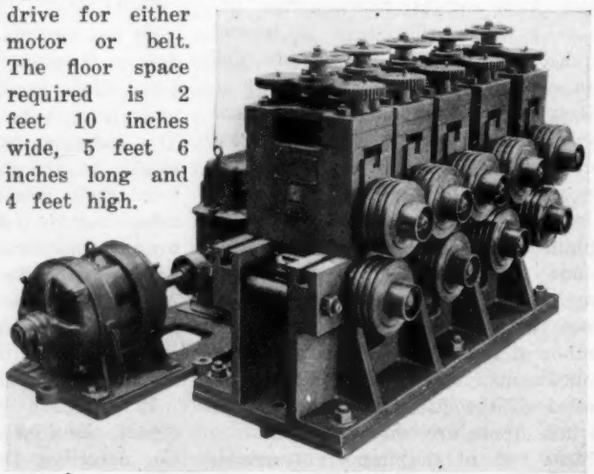
The Gisholt Machine Co., Madison, Wis., is manufacturing a new type balancing machine especially designed for work on flywheels, pulleys, fans and clutches. The machine measures the amount of unbalance and locates the point where the balancing correction should be made. An adapter facilitates rapid loading and unloading, pieces up to approximately 50 inches diameter and 300 pounds being handled. Readings are given automatically on a new type of recording amplimeter. While one machine automatically measures or locates the unbalance, the operator can load, unload or operate a second machine or make balancing corrections on balanced parts. Corrections are obtained simultaneously for both standing and running balance. Uniform elimination of vibration due to rotative unbalance in the product is another advantage of the machine, according to the manufacturers.



Straightener Handles Wide Range

No. 171

The Sutton-Abramsen Engineering Co., Pittsburgh, is manufacturing a special straightening machine designed to take hexagons, octagons, flats and shapes. Angles up to 2 x 2 x ½ inch, flats up to 2½ x ½ inch, and rails up to 15 pounds can be handled. The straightening speed varies between 250 and 300 feet per minute, for which is required a 15-horsepower direct or alternating current motor operating at 600 revolutions per minute. The top rolls can be regulated so as to lengthen or shorten the straightening centers, thus both large and small sizes can be handled on the same machine, which is equipped with special gear drive for either motor or belt. The floor space required is 2 feet 10 inches wide, 5 feet 6 inches long and 4 feet high.



The lever automatically returns to the stop position when the operator's hand is removed, this relieving the operator of fatiguing hand movements and speeding production. To facilitate the handling of many face milling jobs, tool room boring and milling jobs which demand that the operator stand behind the table to observe cutter action, rear control of all feeds has been provided.

Quick set-ups are made possible through the easy shifting of the rectangular overarms, the use of the power quick traverse and the general convenience of controlling the movements of the machine. As was the case in the machine just previously described, this miller has a sliding gear transmission with its shafts mounted in tapered roller bearings. The pyramid column has been incorporated in this machine also and tapers gradually from the overarm to the rim of the base. An enclosed motor drive is provided within this column.

Many new features have been added to the line of milling machines manufactured by the Kearney & Trecker Corp., and are enumerated in No. 174. One of these features is a power rapid traverse to the table, the control being through a long lever on the right-hand side of the knee. Raising this lever causes the table to travel at the rate of 100 feet per minute in the same direction in which the table power feed is engaged. A new multiple disk clutch works continuously under full load. When the clutch is disengaged, the disks are amply separated to prevent a tendency to drift.

To incorporate new features of control and compactness, the Rockford Machine Tool Co. has redesigned its shaper. The new tool is described as No. 168. Hereafter the tool will be built only with a single pulley drive, however, with a slight change, this model can be converted into a motor driven machine. The speed transmission gears are assembled into the column and the changes are selected from the operator's side of the machine. Only the gears in use are in mesh. The feed has been changed from the crank motion to the direct driven type, fully involved in the bull gear hub.

In No. 169 is described a new balancing machine which has just been brought out by the Gisholt Machine Co. It was designed especially for short work such as flywheels, pulleys, fans, clutches, etc. The machine performs two functions, namely, that of correctly measuring the amount of unbalance and locating the point where the balancing correction should be applied. A simple adapter that facilitates rapid loading and unloading is employed with the machine which will handle pieces up to and approximately 50 inches in diameter.

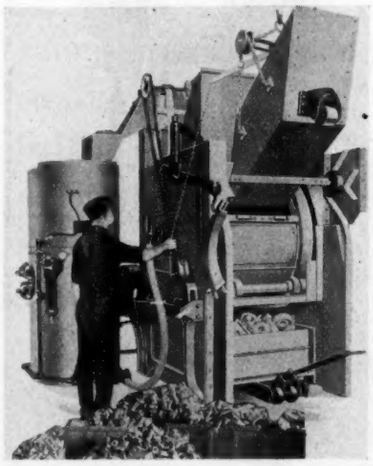
For cutting threads and tapping nuts either right or left hand within a range from ¼-inch to 2 inches, the Landis Machine Co. has developed a new design of ½-inch double head threading machine. It is described as No. 175. This machine, which has a geared headstock and single pulley drive, has four speeds which give to the die head speeds of 157, 226, 315 and 441 revolutions per minute, respectively. The die head is opened and closed automatically at predetermined limits by the carriage or by hand. The vise has horizontal sidewise as well as vertical centering adjustment, a feature which insures perfect and permanent alignment with the die.

A board drop hammer just announced by the Erie Foundry Co. and described as No. 177, is unique in that the ram is lifted by means of four rolls instead of the usual two. The two pairs of rolls are carried in equalizers so that the pressure of the rolls against the board always is the same.

Sand Blast Barrel Loads Quickly

No. 172

The Pangborn Corp., Hagerstown, Md., announces a new type sandblast barrel which can be loaded with a full charge of 16 cubic feet in 35 seconds by the automatic device on the barrel. A large door opening in the drum accommodates a steel skip, raised by trolley or crane, traveling on guides in front of the barrel to dumping position. Clearance under the barrel is sufficient to receive a receptacle large enough to contain the whole charge, which is dumped by rotating the barrel. The barrel is of the direct pressure type. Two mixing chambers have individual lines to the nozzles, which are held in ball-and-socket joints in frames on the side of the casing. The machine capacity is 5000 pounds of sand or 12,500 pounds of steel abrasive. Additional features are the enclosed gear reduction drive integral with the barrel and the steel-tired barrel drum running on manganese steel rollers.



Electric Tractor Handles Sheets

No. 173

The Elwell-Parker Electric Co., Cleveland, is now marketing a new type electric handling unit designed particularly for the sheet and tin plate industry. The unit is driven by electric motor receiving power from a storage battery. This machine can be turned easily on congested floors by means of the four-wheel steering apparatus. Wheel and motor bearings are ball or roller type and the machine's capacity is 5000 pounds. Vertical uprights may be tilted to a 40-degree angle for carrying purposes, the sheets thus carried tending to align themselves while traveling. The electric hoist has two drums, one for rocking the frame and the other for lifting, their action being independent. The machine's lifting forks are collapsible, thus decreasing the overall length of the truck when necessary.

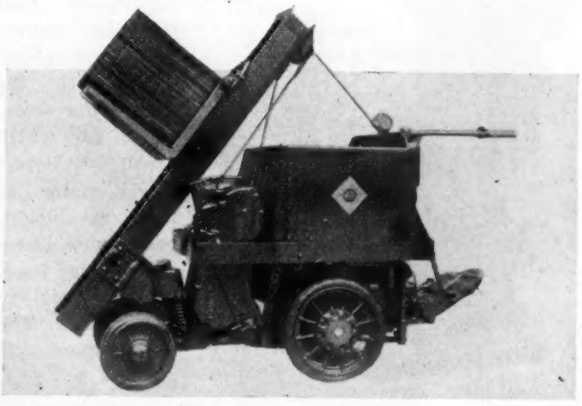
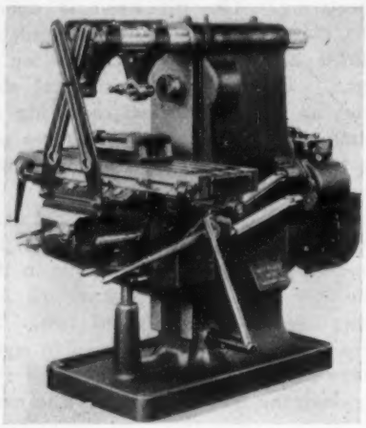


Table Has Power Rapid Traverse

No. 174

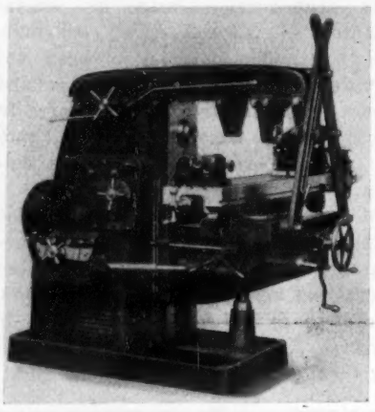
The Kearney & Trecker Corp., Milwaukee, is making several design changes in its entire line of milling machines. A power rapid traverse has been added to the table, allowing an increase of speed to 100 inches per minute in the same direction in which the table power feed is engaged. A new multiple disk clutch permits continuous operation under full load. Ample separation of disengaged disks eliminates drifting tendencies. The clutch has a cone-type brake. A new adjustable starting lever operating the friction clutch is adjustable to the convenience of the operator. Centralized table feed control is accomplished by a single lever which engages the automatic longitudinal feed in action independent of either cross or vertical feeds. This allows faster operation. An oil reservoir, prominently located, is connected to the wearing places in the table and saddle. This, together with an automatic flooded lubrication for gears and bearings concentrates the oiling system.



Many Safety Features on Miller

No. 176

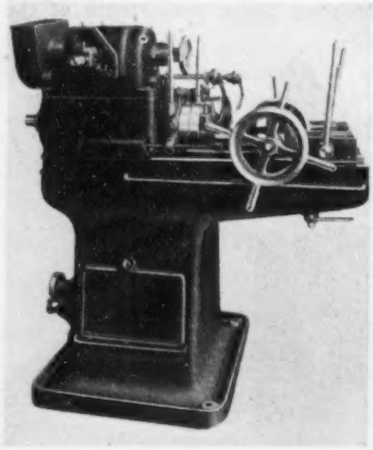
The Cincinnati Milling Machine Co., Cincinnati, has developed high power milling machine with several new features. Solid motor mounting eliminating vibration is secured by bolting the motor to a flat plate which is bolted in turn to the box section base of the machine. The driveshaft is connected by chain to the motor, which is arranged to facilitate oiling and adjusting. The gears in the sliding gear spindle drive provide for 16 spindle speeds and are mounted on integral keyed shafts. These shafts are supported at both ends in special antifriction tapered roller bearings. Driving sprocket is mounted with double roller bear- lubrication minimizes wear. Safety features include ing. Pyramid form column is interchangeable for overhead belt and enclosed motor drive. Centralized automatic spindle stop, and completely enclosed driving belt or motor. Double starting levers, multiple disk clutch running in oil, and rear control are additional features. The power quick traverse is operated by a single lever.



Permanent Die Alignment Insured

No. 175

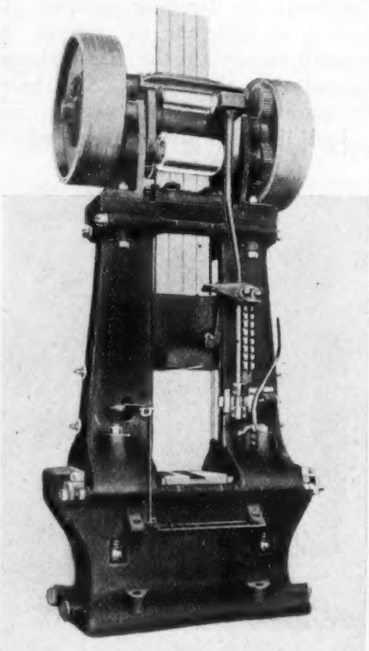
The Landis Machine Co., Waynesboro, Pa., is marketing a new design ½-inch double-head threading machine for cutting threads and for tapping nuts either right or left hand within a range of ¼ to 2 inches. The machine has a geared headstock and single pulley drive. The main spindle is equipped with bronze bearings. Four adjustments give the die head speeds of 157, 226, 315 and 441 revolutions per minute. The machine may be equipped with a leadscrew attachment with only one leadscrew being required for each carriage, the changes in pitch being cared for by a substitution of gears. Automatic operation of the die head is provided. A feature embodying a horizontal sidewise and a vertical centering adjustment for the vise insures permanent alignment with the die. This machine, for which a 1½ horsepower motor at 1200 revolutions per minute is required, is readily convertible to motor drive. The floor space is about 4 x 3 feet.



Board Drop Hammer Has Four Rolls

No. 177

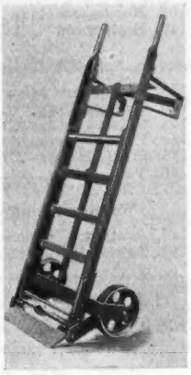
The Erie Foundry Co., Erie, Pa., has developed a new line of board drop hammers in which the ram is lifted by means of four rolls instead of the usual two. It is claimed the new construction will reduce the maintenance cost of boards and belts. Pressure of the rolls against the board is regulated by equalizers contained in the eccentrics which are journaled in the roll housing. Another innovation is the use of box section frames, of new guide construction. The pattern facilitates renewal of worn guides and permits removal of the ram without dismantling. The upper works of the hammer form a rigid unit, adjustable for aligning the dies.



Facilitates Handling Steel Goods

No. 178

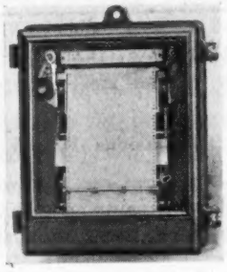
The Liftsaver Mfg. Co., New York, has developed an all steel handling truck for handling iron and steel products. A collapsible feature makes it available for structurals and pipe, and when fully extended, may be used as a rack truck. The handles are formed of the angles that make up the side bars. Wheels are supported at four points. Collapsed, the unit becomes a hand truck for package handling.



Announces New Type of Recorder

No. 179

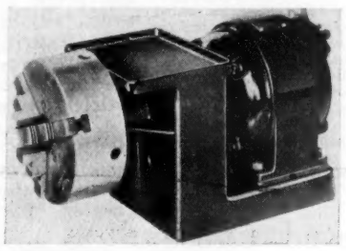
Charles Engelhard, Inc., New York, has placed on the market a new type strip chart recorder. The instrument is available in the multiple pen type and for use with automatic temperature regulators. The action involves a supersensitive, frictionless, moving coil galvanometer, with a mercury-platinum automatic switch of resistance 0.003 to 0.004 ohms. The clock can be furnished for alternating current or with powerful spring motor. The case is dust proof.



Bench Machine Operates Reamers

No. 180

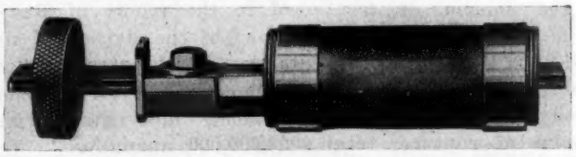
The Geo. H. Blettner Co., Chicago, announces a new power operated reamer drive for light work. The spindle has a geared scroll chuck accommodating reamer shanks up to 1¼-inch diameters. Running speed is 38 revolutions per minute, balanced gear reduction being used. Occupying a space 7 x 15 inches, the total weight of the drive is 80 pounds.



Simplifies Renewable Type Fuse

No. 181

The Chicago Fuse Mfg. Co., Chicago, has simplified its knife-blade type renewable fuse. The fusible element makes direct contact with the knife blades and renewal is made by means of a stud and washer. Large openings in the casing ends facilitate cleaning or inspection. Extra heavy gray horn fiber is used in construction of the case. These fuses are made in all standard ratings.



Designs Line of Special Clamps

No. 182

J. H. Williams & Co., Buffalo, N. Y., recently have announced the marketing of a new line of special clamps particularly designed for use by body makers. These clamps are drop forged from special steel and are heat treated for maximum stiffness. The deep throat is designed to give ample clearance. Screws are drop forged in one piece with no handle or wings, and provide a solid lever recessed and rounded for easy hand grip. The screws are threaded for strength and rapid adjustment, and are provided with swivels on all sizes. The new line of clamps is obtainable in sizes from 4 to 10 inches for use in the various wood and metal manufacturing fields. It is claimed that the clamp supplies dependable strength at minimum weight.

Index of New Equipment Described in This Issue

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170.	Milling machine	Cincinnati Milling Machine Co.	564
171.	Straightening machine	Sutton-Abramsen Engineering Co.	564
172.	Sand blast barrel	Pangborn Corp.	565
173.	Lift truck	Elwell-Parker Electric Co.	565
174.	Milling machine	Kearney & Trecker Corp.	566
175.	Threading machine	Landis Machine Co.	566
176.	Milling machine	Cincinnati Milling Machine Co.	566
177.	Drop hammer	Erie Foundry Co.	566
178.	Hand truck	Liftsaver Mfg. Co.	567
179.	Recording meter	Charles Engelhard Inc.	567
180.	Power reamer	Geo. H. Blettner Co.	567
181.	Renewable fuse	Chicago Fuse Mfg. Co.	567
182.	Steel clamps	J. H. Williams & Co.	567

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Blum, Julius, & Co.	7/2
Campbell, Andrew Co., Inc.	7/2
Chambersburg Engineering Co.	8/6
Chicago Fuse Mfg. Co.	9/3
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Cincinnati Milling Machine Co.	9/3, 9/3
Cleveland Stone Co.	7/2
Cleveland Worm & Gear Co.	8/6
Cutler-Hammer Mfg. Co.	7/2, 8/6
Elwell-Parker Electric Co.	9/3
Engelhard, Charles, Inc.	9/3
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Excelsior Tool & Machine Co.	7/2
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179. Recording meter	9/3
181. Renewable fuse	9/3
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165. Speed reducer	8/6
154. Straightening machine	8/6
171. Straightening machine	9/3
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To conform with indexing of IRON TRADE REVIEW each half year, the machine tool index for the first half of 1925 *was closed in June and the new index will be carried forward until the close of the year. The consecutive system of numbering, however, will be carried out throughout the entire year in order that a recapitalization may be published next January. The machine tool index for the first half of* 1925 *will be found on Page* 1493 *of the June* 4 *issue.*

Exhibits Show Progress in Steel Treating

(*Concluded from Page* 549)

TIMKEN ROLLER BEARING CO., Canton, O.—This exhibit will consist of steel sections, tubing, forgings and roller bearings. M. T. Lothrop, A. J. Sanford, Charles A. Swan, Thomas W. Hardy and H. W. McQuaid will be in charge.

UNION TWIST DRILL CO., Athol, Mass.—This company will show a grinding machine for tool sharpening in operation. A line of cutters, hobs, twist drills, reamers, taps, dies, screw plates and other tools will also be displayed. J. H. Horigan, George F. Holland, Laurence H. Laythe, G. E. Strople and G. G. Hunter will be the representatives.

UNITED ALLOY STEEL CORP., Canton, O.—Finished automobile, locomotive and industrial machinery parts; forgings and rolled axle shafts; and special noncorrosive iron will comprise this company's display. Representatives H. H. Pleasance, M. H. Schmid, F. W. Krebs, R. B. Kelley, J. D. Jones, M. A. Grossmann, N. L. Deuble, C. C. Snyder and B. H. Shirk.

UNIVERSAL GRINDING MACHINE CO., Fitchburg, Mass.—An operating exhibit of universal and cylindrical grinding machines will be conducted at this company's booth. Robert D. Gould and G. S. Gould will be representatives.

VANADIUM-ALLOYS STEEL CO., Latrobe, Pa.—This company will exhibit high speed, alloy and carbon tool steels and their uses. R. C. McKenna, W. S. Jones, L. D. Moberg, J. P. Gill, L. D. Bowman, J. H. Roberts, W. R. Mau, A. F. McFarland, J. H. Caler, R. R. Artz, T. J. VandeMotter and G. E. Reminger will be in charge.

V & O PRESS CO., Hudson, N. Y.,—Improved type power presses will be shown in operation by this company. H. U. Herrick and F. A. Beardsley will conduct the exhibit.

WALCOTT LATHE CO., Jackson, Mich—A crankshaft contour turning lathe, a crankshaft pin turning and finishing lathe and a gear-tooth grinder will be shown in operation at this booth. D. G. Kimball, N. R. Townley, C. H. Sylvester and R. G. Williams will conduct the company's exhibit

WALKER, O. S., CO., Worcester, Mass.—At this booth will be shown in operation a spindle grinding machine and magnetic chucks. A. O. Smith will be in attendance.

WARNER & SWASEY CO., Cleveland—A universal hollow hexagon turret lathe, and new type pneumatic grinder will be in operation at this exhibit under the direction of C. J. Stilwell, K. L. Pohlman, James Craig, A. C. Cook and W. K. Bailey.

WESTINGHOUSE ELECTRIC & MFG. CO., Pittsburgh—Late design electric furnaces, electric melting pot and various features of electric furnace construction will be exhibited by this company. In charge of the display will be W. S. Scott, R. T. Ruttencutter, M. R. Armstrong, F. G. Allen, H. H. Sugg and J. F. Sweeney Jr.

WHEELOCK, LOVEJOY & CO. INC., Cambridge, Mass.—This exhibition will consist of alloy and tool steels. Applications to special machine parts will be suggested. A. O. Fulton, Frederick H. Lovejoy, E. E. Bartlett, G. A. Barch, Clement H. Williams, F. F. Blosser, E. P. Gaffney, Thomas W. Knight, L. P. Needham, F. J. Devan and Austin R. Townsend will represent the company.

WHITNEY MFG. CO., Hartford, Conn.—Silent power transmission chains, steel roller chain and sprockets will be exhibited in operation by this company. D. I. Wheeler, C. E. Wertman and S. C. Smith will conduct the display.

WILMARTH & MORMAN CO., Grand Rapids, Mich.—Surface grinders; motor and belt-driven cutter and tool grinders; and new type motor-driven drill grinders will be shown in operation. The booth will be in charge of C. H. Slaughter and A. Williams.

WILSON-MAEULEN CO., New York—Recording and indicating pyrometers with automatic electrical compensator; electric resistance bulb thermometers; automatic temperature controls; and Rockwell hardness testers will be exhibited in operation at this company's booth. J. P. Roberts, C. E. Hellenberg and Harvey Lee will represent the company.

BILLINGS & SPENCER CO., Hartford, Conn.—This company will show in operation a die sinking machine; trimming die miller, and boards displaying various tools. J. J. Trapp, F. Oberg and W. Roy Moore will represent the company.

Cooling Believed Cause of Brittleness

(*Concluded from Page* 552)

stituents, the physical properties are largely dependent upon the nature of the constituent that happens to be continuous throughout the area under stress. Presumably then, failure will occur in any piece when the internal movement or flow induced by the stress is sufficient to produce the critical degree of continuity of the brittle constituent. Obviously, the amount of flow required, which is the measure of ductility, will depend upon the original internal arrangement of the piece. Microscopic examination of fractured specimens near the point of rupture tends to substantiate the view of failure of low carbon steel set forth above.

Tentative Conclusions Drawn

From the investigations on which the foregoing statements are based, the following tentative conclusions were made:

1. Dendrites are retained in steel castings by rapid initial cooling, and not by slow initial cooling as quite frequently stated.

2. Ferrite dendrites are not especially brittle; the brittleness of dendritic steel is due to the concentrations of carbon-rich material between the arms of each dendrite and between adjoining dendrites.

3. Dendritic steel produces a cellular or continuous arrangement of the pearlite in annealed castings, a condition which lowers their ductility.

4. Annealed or untreated steel castings whose initial cooling was slow tend to have the pearlite in uniformly distributed masses which promote greater ductility and resistance to shock.

5. These conclusions warrant the general conclusion that, for best results regarding brittleness, steel castings of moderate size should be allowed to cool in the mold.

Simplification Effects a Large Saving

Instances of millions of dollars saved annually by industries which have already adopted simplified production and distribution methods are mentioned in the report of Ray M. Hudson, chief of the division of simplified practice, Washington, to Secretary of Commerce Hoover. Estimated savings among nine groups alone total $293,600,000 annually.

Editorials

Steel Treaters Extend Activities

PROMINENT attention is given in this issue to the coming Cleveland convention and exhibition of the American Society for Steel Treating and the concurrent meetings of divisions of the Society of Automotive Engineers and the American Society of Mechanical Engineers. The approaching event is significant not only because it will be on a more elaborate scale than its predecessors, but because it truly marks the entrance of the steel treaters' organization into a wider field than it has occupied previously.

An examination of the technical program and of the character of exhibits will indicate the broad scope of the amplified activities of the society. It proposes to cover the making and finishing of steel, as well as its treatment and conversion into finished products. That this is a logical development is patent, because any thorough study of steel treatment involves consideration of steelmaking processes.

In broadening its base in this way the American Society for Steel Treating undertakes a service that has been attempted in part by the American Iron and Steel institute and the American Institute of Mining and Metallurgical Engineers. Time alone will tell whether or not it will fill the role more acceptably than these older organizations. However, the steel treaters' brilliant record thus far, including its intimate hold on members and its faculty for providing unusually good technical programs speaks well for success in its extended activities.

The steel industry needs a more adequate meeting ground for opinions on its technical problems. It also welcomes a closer tieup between the personnel of the steelmaking and steel finishing and fabricating branches. The officers of the society seem to have sensed this opportunity and the entire industry should wish them success in their efforts to satisfy these needs.

Where Railroads Could Spend Wisely

GREAT railroads think nothing of spending from $75,000 to $125,000 for a single locomotive. They do it readily without haggling or squabbling over price. Yet each of several nationally known roads have not one but many locomotives idle on tracks in roundhouses or yards, because the machine tool equipment at many shops is inadequate or too antiquated for their reclamation. Offsetting this condition, when it comes to the purchase of modern machine tools or the equipping of an entire machine shop at the cost of perhaps one locomotive, endless red tape has to be unwound; endless delays are encountered in putting through the requisitions and endless postponements take place in connection with the appropriations.

There would seem to be something radically wrong with this policy because it is uneconomic and unethical for the railroads to have so many nonusable engines standing around where by the expenditure of the cost of one they could be put in first class running order. Not only would the locomotives be repossessed but the machine tools would be on hand to be put to further use in refitting and refurnishing rolling stock in the future. It would appear that the efficiency departments of some of the public carriers have considerable work awaiting them in this direction.

Shipping Takes More Tanks

THE marked increase in the world tonnage of vessels using internal combustion engines is turning the attention of shippers and shipbuilding yard owners to fuel storage tanks. Ports of all countries are now being called upon to supply fuel oil in larger and larger quantities, and the convenient tank capacity has not yet caught up with this increasing demand. Lloyd's reports a total world vessel tonnage now under construction of 2,369,831 tons. Of this amount 1,129,912 tons covers vessels fitted with internal combustion engines, while the total tonnage of steam vessels under construction is practically the same, or 1,212,525 tons. Of course the tonnage of steam vessels using oil is constantly increasing.

Marine engineers are turning with increasing enthusiasm toward the diesel type of engine. Plate manufacturers were prompt to see in this tendency a loss in steam boiler demand, but a leading eastern manufacturer after some study feels that the new demand for steel for tanks both on shore and on board vessels and for tankers will more than offset the loss in steam boiler tonnage. Gear manufacturers also should be interested in the development of the diesel engine drive as a higher engine speed freqently calls for large reduction gear trains. The ever changing designs of equipment and structures in industry due to the demand for greater efficiency mean

changes in the character of finished steel used, but almost invariably these lead directly or indirectly to an increased use of steel. Steel is the leading agent of the engineers who would reduce labor and power costs.

The railroads have made commendable strides in bolstering up many of the departments in which they have been notoriously deficient. If they can make similar improvements in their mechanical operations, including a revision of methods of purchasing, they will have accomplished something well worth while.

Alloy Steel Attracts Corporation

WHAT the United States Steel Corp. thinks about the future of the steel business in the great territory of which Chicago is the heart, is shown by the preparations of its subsidiary, the Illinois Steel Co., to locate another bar mill, one of the biggest in the country, in that center. Recognition of the importance of that territory on the part of the Steel corporation goes back to the original formation of the corporation when the Illinois Steel Co. was taken in. It was emphasized when the great Gary plant was constructed, with its diversified output. The decision to invest $4,000,000 in a new plant shows that the Steel corporation anticipates considerable further growth in that territory.

Establishment of the new mill at Chicago emphasizes the tendency toward the location of steel plants at sites as close to the consumers as the raw material assembling costs will permit. The demand for alloy steel on which the new mills will specialize largely is centered in the middle western states chiefly because of the automobile industry. The Chicago district with its already established capacity for producing both common and special steels, apparently has been chosen by the Steel corporation as the most strategic point for it for the broader development of alloy steel manufacture and distribution.

Decision to devote the new mill to alloy steel bars marks a new policy on the part of the United States Steel Corp. which has been producing largely plain carbon steel. It reflects the growing use of commercial alloy steels constantly being brought forth by the needs of our intensive and exacting modern life. The figures of alloy steel production tell an interesting story. In the past 15 years the output of this kind has increased approximately 400 per cent. The rise has been steady. The highest totals of production were reached in 1923 and 1924. Though common steel ingot production in 1924 fell off about 16 per cent from 1923, alloy steel last year showed a shrinkage of only 3 per cent.

What Our Readers Are Thinking

Building Code Report Is Biased

To the Editor:

WE HAVE noted with a great deal of satisfaction the articles you have been publishing with regard to the tentative report on unit stresses as prepared by the building code committee, department of commerce, and we fully agree with everything you have said about the report. It is certainly the most biased and prejudiced thing of its kind we have ever seen.

The structural steel industry is, of course, considerably to blame for the condition they find themselves today in allowing the cement industry to get away with the things they have when advocating reinforced concrete buildings.

The report referred to is so full of absurdities, inaccuracies and misleading statements that it is, of course, easy to combat and refute. However, coming from a department of the government it unquestionably will influence a great many people who are ignorant of the facts in the case and may thus do a great deal of harm to the structural steel industry.

It is hoped that the American Institute of Steel Construction will have sufficient vitality and intelligence to prevent the adoption of the code and that it may within the next few years develop sufficient strength to put our industry back in a position to which it is rightfully entitled in the building field.

You are to be congratulated on the stand you have taken in this matter and we sincerely trust you will keep up the good work.

KARL E. VOGEL, *General Manager,*
Omaha Steel Works.

Omaha, Nebr., Aug. 17.

Would Revise Pig Iron Capacity

To the Editor:

THE very concise article of John A. Topping, chairman of the Republic Iron & Steel Co., in your issue of Aug. 6, calls attention to estimating capacities of steel plants.

Not only should Mr. Topping's suggestion of a revision of the recorded capacities of steel plants be made, but there should be established some recognized rule for determining capacity of open-hearth furnaces and bessemer converters just as there is now a rule for determining the capacity of blast furnaces.

The Southern Ohio Pig Iron and Coke association adopted this rule for blast furnace capacity in August, 1920, and it is now generally used. Briefly this rule is: "Regardless of the grade of pig iron produced, a blast furnace should burn 60 pounds of coke per 24 hours for each cubic foot of 'working volume' measured from the level of the iron notch to two feet below the bell when closed." The coke for this basis should contain 89 per cent fixed carbon and not over 1 per cent of sulphur.

When the revision capacities of steel plants is made the above rule should be used for blast furnace capacity of the country.

R. H. SWEETSER, *President,*
Southern Ohio Pig Iron and Coke association.
Columbus, O., Aug. 17.

The Reader's Page

Vol. LXXVII, No. 10 IRON TRADE REVIEW Sept. 3, 1925

The Reds: Who They Are and What They Are, Reprinted

MANY readers of IRON TRADE REVIEW want the series of articles on the radical movement assembled in compact form for future reference by themselves, for distributon among friends interested in the subject and among employes.

Cleveland Welcomes Steel Treaters. Page 569.

The series, as readers recall, ran in eight consecutive issues of IRON TRADE REVIEW, and attracted widespread attention. This publication wanted a comprehensive description of the reds and their activities, with special reference to the significance of such activites to American industries. It engaged the best informed writers on the subject, and the series was prepared in sequence under the editorial direction of the managing editor of the *New York Commercial*, who for years has specialized in a study of world subversive movements. The reprints are available in any number at a nominal charge.

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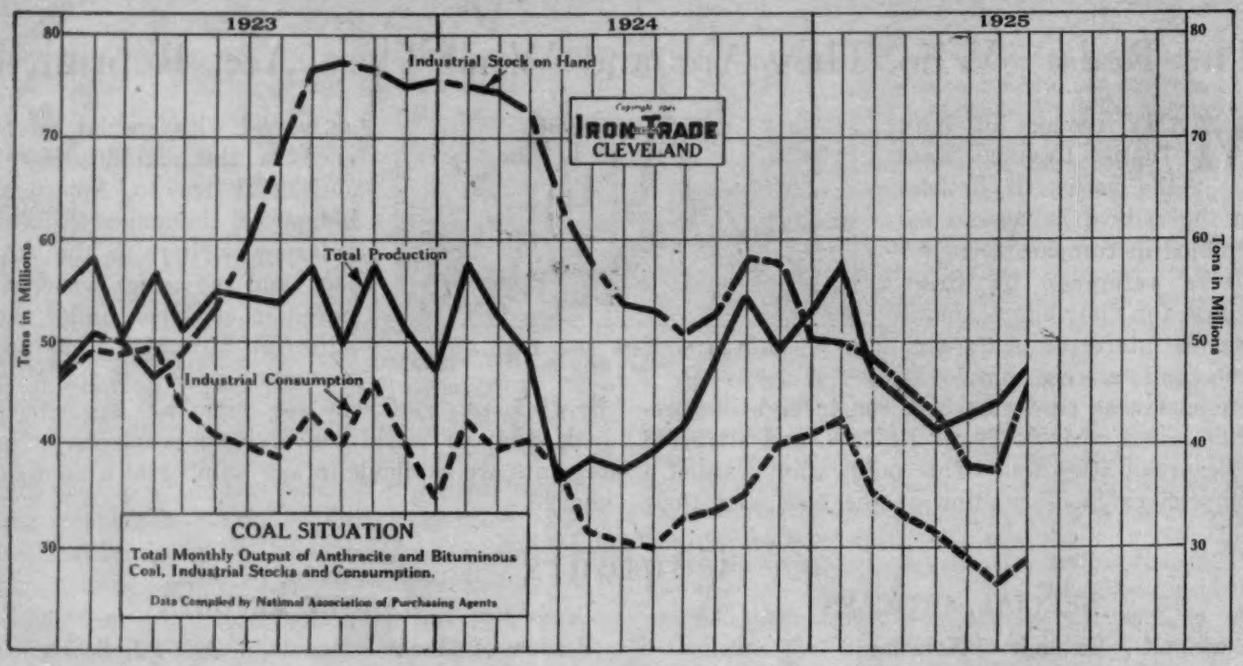
The Business Trend



Level of Trade Higher Than in 1924

BY JOHN W. HILL, Financial Editor

VARIOUS important measures of trade indicate current improvement compared both with preceding weeks and with the corresponding period one year ago. Statistics of the coal industry add striking testimony to this evidence. Coal consumption figures for July, computed by the National Association of Purchasing Agents, signify marked improvement in business activity.

AS SHOWN by the accompanying chart the aggregate estimated industrial consumption of coal was 29,300,000 tons in July, a gain of 1,000,000 tons over June. Output of coal increased by 3,000,000 tons. It is significant that industries have increased their stocks of coal by more than 6,000,000 tons. This was probably due to anticipated trouble in the hard coal fields. Depression in the union soft coal fields is only slightly less.

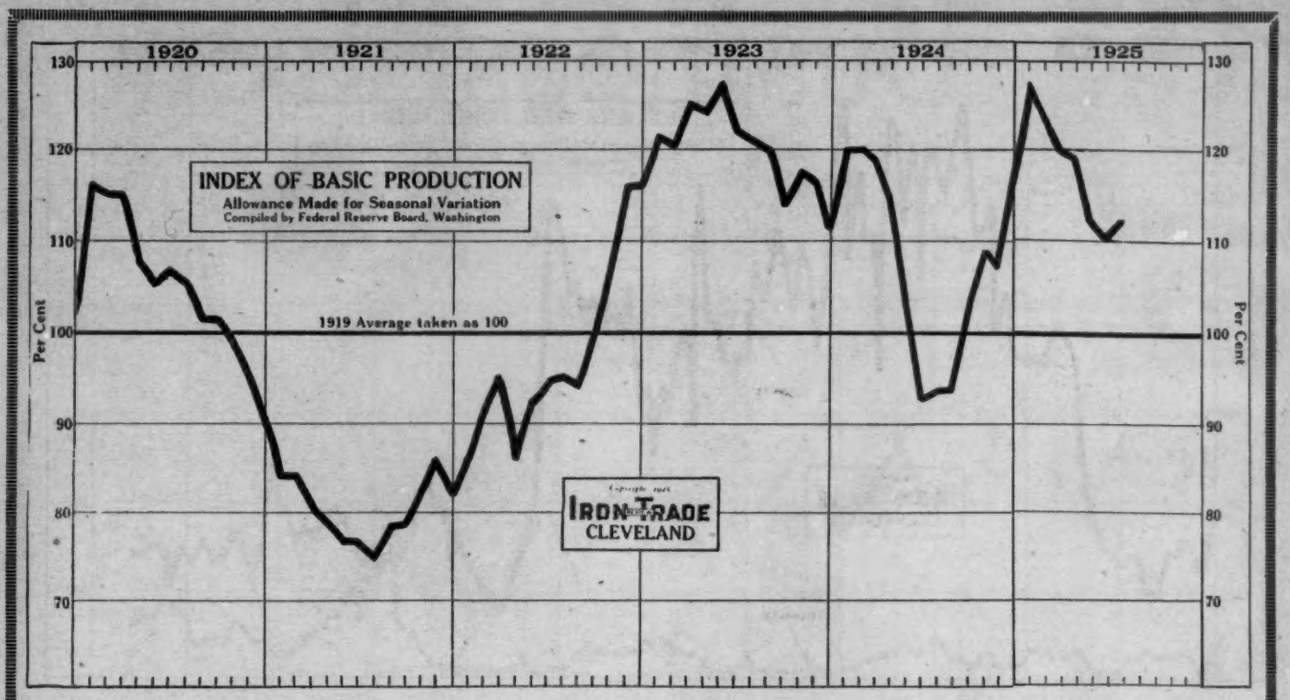
STOCKS of hard coal amount to 8,635,000 tons while stocks of bituminous amount to 39,000,000 tons. The storage pile of soft coal is at the lowest ebb since January, 1923. The strike of the 158,000 anthracite union coal miners has not proven a generally disturbing development nor is it likely to do so. Stocks are ample for immediate needs and prolonged cessation of mine operations is not regarded as probable.

INCREASED coal outputs have contributed to the present extraordinary totals of freight traffic. In the week ended Aug. 15 car loadings reached an aggregate of 1,064,000 cars. This was a new peak for the year and overtopped all other years for corresponding weeks. With the rise of freight movements the number of idle cars is dwindling steadily. It rose to 350,000 cars some weeks ago and now it is at approximately 200,000 cars. Some authoriteis forecast a probable shortage of cars this autumn.

THESE huge movements of freight reflect an unusual degree of distribution and consumption for this season of the year. The situation is explained by the fact that not only are employment and wages at good levels in industry but the power force of agricultural buying power is being felt. The exchange value of farm products is now virtually back at the parity of prewar days.

GAINS in industrial activity continue to appear. The latest statistical record of production of basic industries shows the level of these activities 20 per cent above that of one year ago. Starting from this higher point, business gives every promise of making further marked advances under the stimulus of autumn demand.

The Business Trend

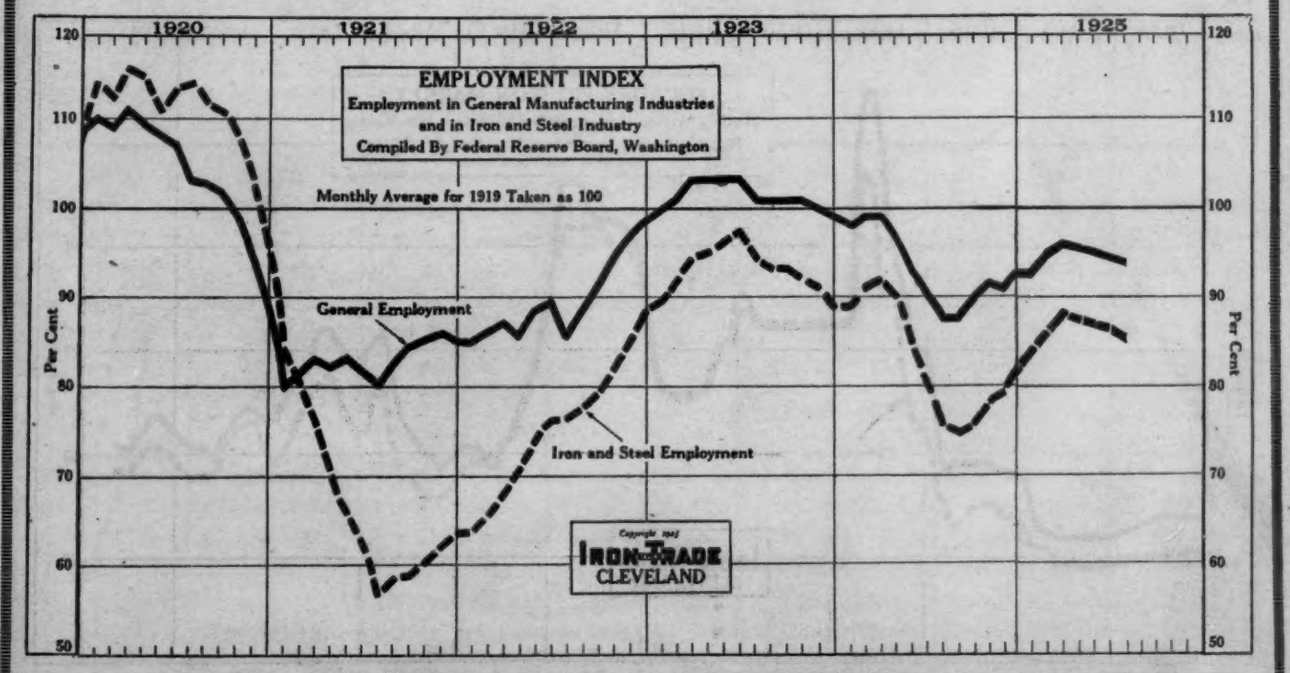


Basic Production

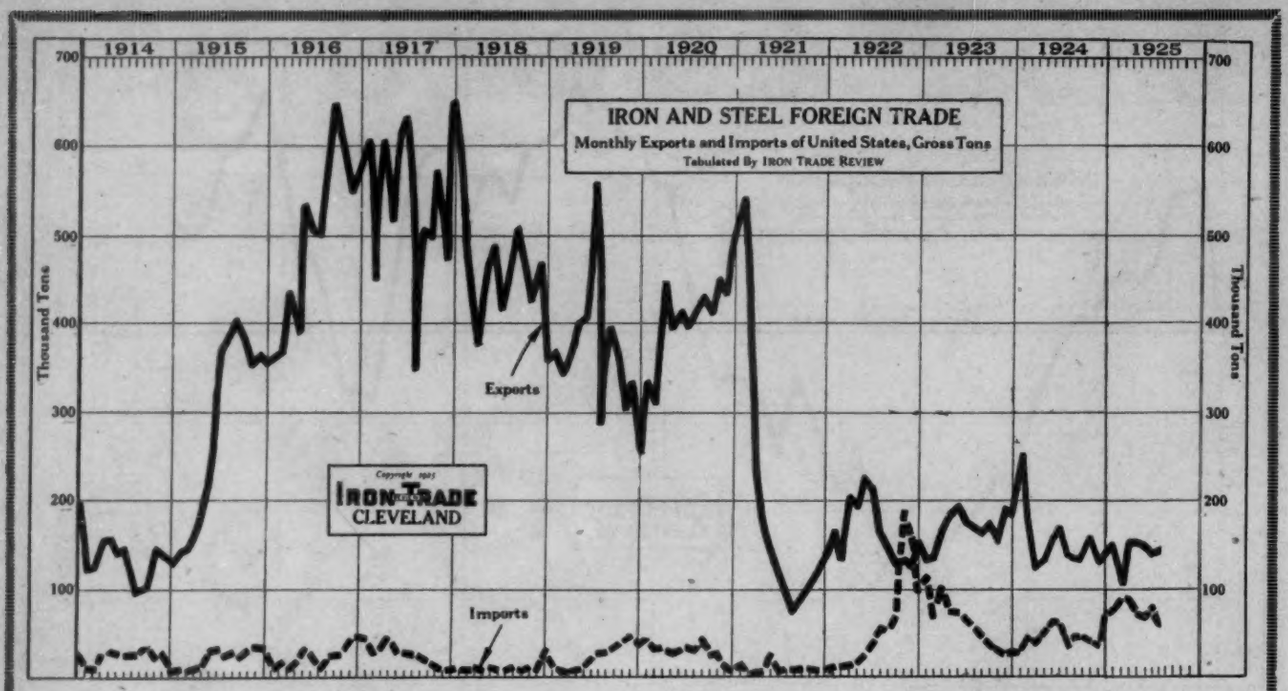
JULY witnessed a small gain in the production of basic industries. The index computed by the federal reserve board stood at 112 for the month compared with 110 in June. The level of output for the month was 20 per cent higher than it was in July, 1924. The July figure brought the first increase since the decline started early in the Spring. The position of the index this summer bears out other important testimony that business has more than held its own compared with the summer of 1924.

Employment Index

A SMALL seasonal decline occurred in July for industrial employment. The index for general employment stood at 93.1 compared with 94.2 in June and with 89.1 in July, 1924. The index of employment in iron and steel industries stood at 84.9 in July against 86.3 in June and 80 in July, 1924. The fact that plant operations have declined less sharply this year than they did last year is reflected in better employment levels. Wages are relatively high and the purchasing power of labor is great.



The Business Trend

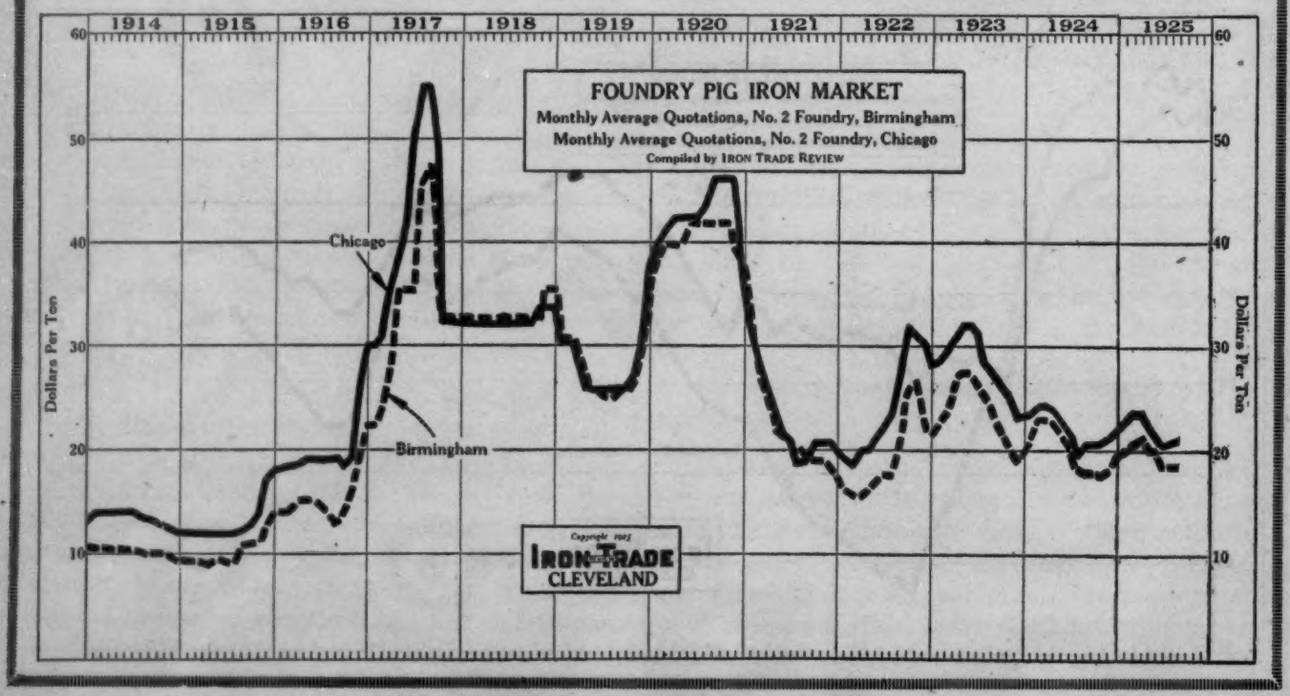

IRON AND STEEL FOREIGN TRADE
Monthly Exports and Imports of United States, Gross Tons
Tabulated By IRON TRADE REVIEW
Exports
Imports
Thousand Tons
1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925
700 600 500 400 300 200 100
IRON TRADE CLEVELAND

Steel Foreign Trade

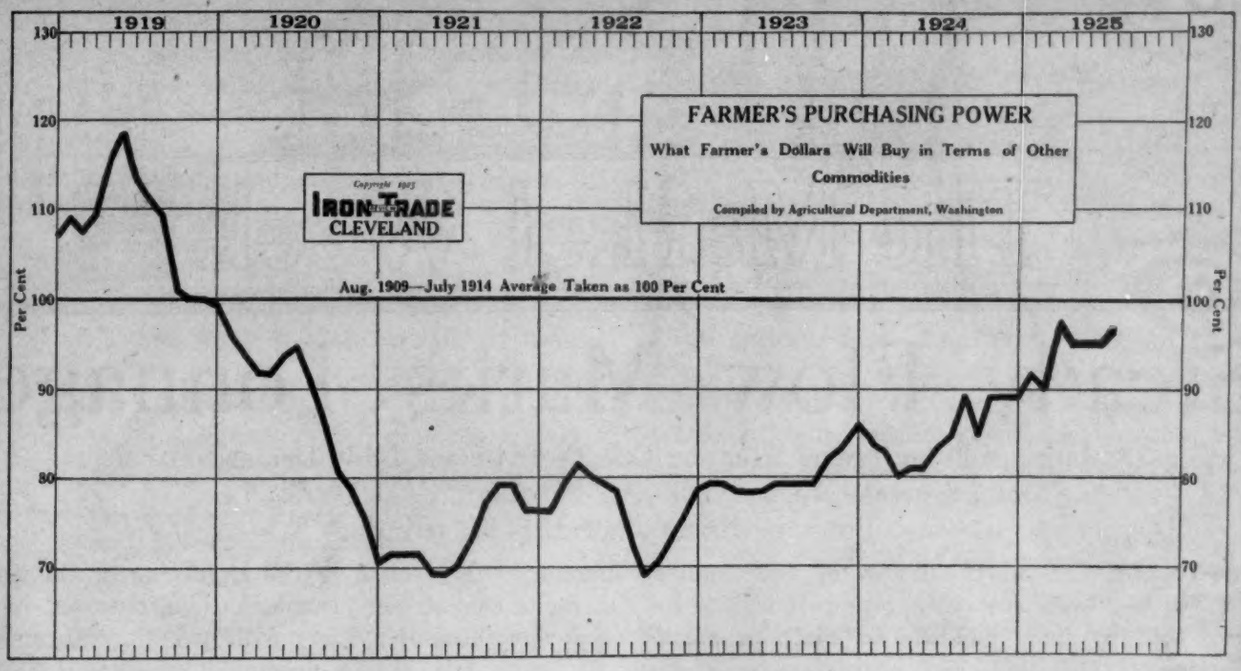
JULY brought a slight increase in the volume of exports of iron and steel products and a considerable decline in the volume of imports. Exports totaled 138,670 tons compared with 136,847 tons in June and 138,845 tons in July, 1924. Imports in July amounted to 64,642 tons compared with 83,330 tons in June and 30,410 tons 12 months ago. Imports in July were more than twice their volume in July, 1924, while exports were slightly less than one year ago. Pig iron imports were double those of July, 1924.

Foundry Pig Iron

RECENT weeks have brought a faint firming of the foundry pig iron market in the Northern territory. This development has followed months of severe price depression. Heavy purchases and inquiries for foundry iron, however, have altered and brightened the prospects. No. 2 foundry iron Chicago was quoted at $20.50 a ton last week and the August average was at that figure compared with an average of $20.30 a ton for July. No. 2 Birmingham Southern iron has not shared in the strength.


FOUNDRY PIG IRON MARKET
Monthly Average Quotations, No. 2 Foundry, Birmingham
Monthly Average Quotations, No. 2 Foundry, Chicago
Compiled by IRON TRADE REVIEW
Chicago
Birmingham
Dollars Per Ton
1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925
60 50 40 30 20 10
IRON TRADE CLEVELAND

The Business Trend

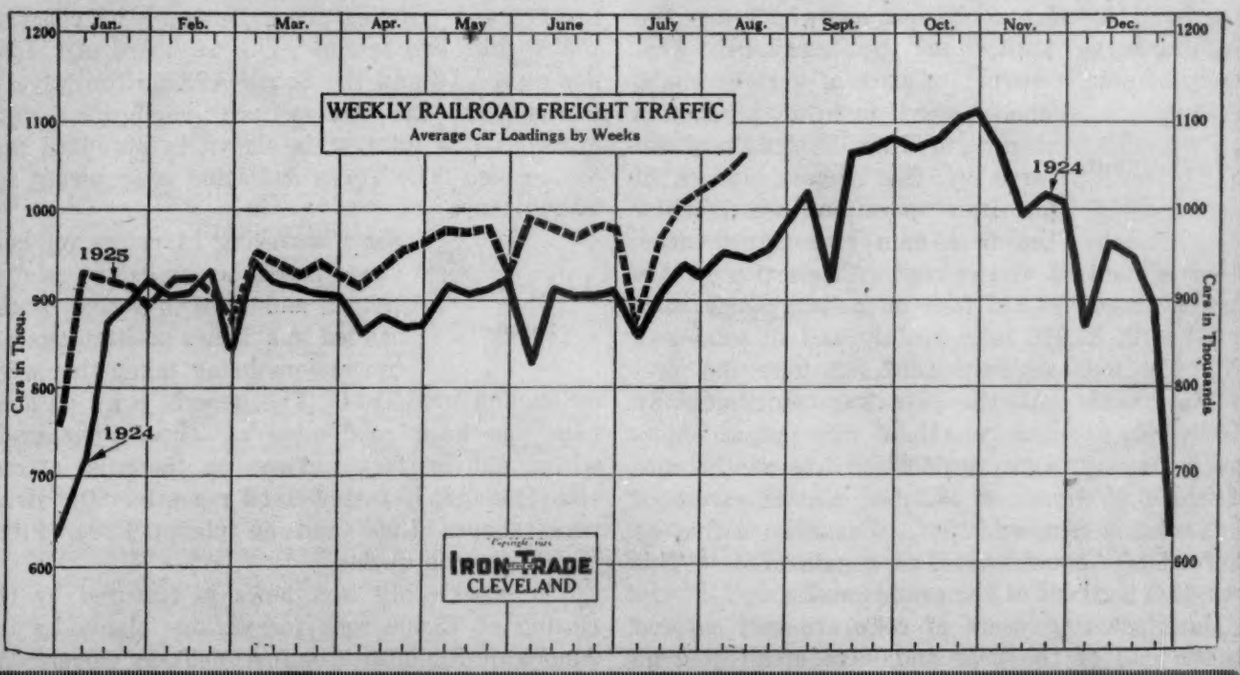


Farmers' Purchasing Power

THE purchasing power of farm products computed by the Bureau of Agriculture held steady in July. The index stood at 96 per cent of the 1913 level compared with 95 per cent of 1913 one month before and with 83 per cent one year ago. The economic position of the farmer after long discrepancy is equal with that of industrial groups this year. In the last 12 months prices of farm products have increased by 15 per cent while those of industrial goods have shown practically no change.

Freight Traffic

FOR the week ended Aug. 15, the total of car loadings was 1,064,793 cars. This was a new peak for the year and an increase of 111,385 cars over the same week of 1924. Compared with the corresponding week of 1923 an increase of 24,855 cars is shown. Total loadings of freight during the first six months of 1925 were 3.8 per cent ahead of the first half of 1924. Loadings of merchandise in less than carload lots have increased heavily showing enormous distribution and consumption of goods.



Steady Flow Marks Tonnage

Stability of Present Steel Situation Due To Sustained Daily Demands from Many Sources—August Gains Are Substantial—Deliveries Less Prompt—Prices Show Less Wavering

STEADINESS in the inflow of new tonnage with a well sustained rising tendency but with no signs pointing to sharp or abrupt changes, is still the chief characteristic of the steel market. August bookings have gone considerably beyond the gains of July, with additional increases of 20 to 50 per cent depending on the product and district. There is nothing to indicate that September will not continue this movement, especially if railroad buying revives, of which there is a little more promise. In August specifications by the leading Chicago producer increased 50 per cent over July. Those of the Bethlehem Steel Corp. were raised 25 per cent. Sheet shipments of larger mills were 40 to 45 per cent ahead of August, 1924.

Strong points in the situation are the scale of automotive buying which is exceptional for this time of year; the demands from farming implement and tractor manufacturers which are the heaviest since 1920; and the continued wide sweep of new construction work of various kinds.

Iron Output Turns

The upward turn of production since late July is definitely set forth by the August figures of pig iron operations which show the first gain since April after a curtailment of 41 per cent. Production in August averaged 87,213 tons on a daily basis compared with 85,976 tons in July and in total was 2,703,616 tons against 2,665,262 tons the preceding month. All the gain was contributed by steelworks furnaces, merchant iron output showing a loss. August production was at the rate of 31,800,000 tons, or 43.5 per cent in excess of the rate in August 1924. Furnaces active at the end of August were 192, a gain of 4. This was 49.2 per cent of the grand total.

Manufacturing users of coke are well covered to the end of the year and have manifested no anxiety this week over the beginning of the anthracite coal strike. Domestic coke, however, has had something of a flurry with prices up 50 cents.

Some Mills Filling

While prompt buying and shipment still are the common practice, deliveries in several lines more plainly are receding. This is most apparent in steel bars where on some sizes mills are naming three to six weeks. Structural shape deliveries in the East have slowed down considerably during the past two weeks. Cases are appearing where buyers, because of these conditions, are placing tonnage farther ahead. In sheets some contracting has been done for last quarter at $2 to $3 per ton above current minimums.

More activity in locomotives may suggest a change for the better in backward railroad buying. The Chesapeake & Ohio is in the market for 110 and the New York Central may close on 150 within two weeks. The Seaboard Air Line has placed 10 and the South African Railways & Harbor 15. Car orders are negligible. More miscellaneous interest is shown in standard and light rails. The Texas & Pacific is inquiring for 20,600 tons.

Hold Prices Firmer

Some wavering of prices on heavier products, notably plates, shapes and bars in recent weeks has led to a firmer position against concessions being taken this week by leading producers. The general price on steel bars has been reaffirmed at 2.00c, Pittsburgh, where, subject to variations, on the most attractive tonnage, it rested until recently. On structural shapes 1.90c and on plates 1.80c, Pittsburgh, now is quoted.

The week's pig iron news is featured by the closing of 75,000 tons for various plants by the American Radiator Co. for delivery over the

remainder of the year. Apart from this important transaction the market is not so active but shows firmness. Sales at Chicago in August were three times those of July. Additional sales of 6000 to 8000 tons of foreign iron are reported around $21.50, delivered cars Boston.

The British steel industry is fading under the drastic competition from continental works. A lot of 20,000 tons of sheet bars was sold into Wales $6 under the home price while pig iron is being bought on the Clyde more than $1.50 below.

IRON TRADE REVIEW composite of 14 leading iron and steel products is unchanged this week. It remains at $37.21.

Prices, Present and Past

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Sept. 2, 1925	Aug. 1925	June 1925	Sept. 1924
PIG IRON				
Bessemer, valley, del., Pittsburgh	$20.76	20.76	20.76	21.76
Basic, valley	18.00	18.00	18.15	19.00
Basic, eastern del., eastern Pa.	20.50	20.50	21.50	20.00
*No. 2 foundry, del. Pittsburgh	20.26	20.26	20.16	21.26
No. 2 foundry, Chicago	20.50	20.50	20.25	20.50
*Southern, No. 2, Birmingham	18.00	18.00	19.00	17.65
*Southern Ohio, No. 2 Ironton	19.50	19.40	18.75	20.00
**No. 2X, Virginia furnace	23.00	23.00	23.00	24.50
**No. 2X, eastern, del. Phila.	21.76	21.76	21.51	21.26
Malleable, valley	18.50	18.50	18.50	19.50
Malleable, Chicago	20.50	20.50	20.25	20.50
Lake Superior charcoal, Chicago	29.04	29.04	29.04	29.04
Gray forge, val., del. Pittsburgh	19.76	19.76	19.66	20.76
Ferromanganese, del., Pittsburgh	119.79	119.79	119.79	97.79
*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.				
COKE				
Connellsville furnace, ovens	3.35	3.10	2.80	3.00
Connellsville foundry, ovens	4.00	3.80	3.75	4.00
SEMIFINISHED MATERIAL				
Sheet bars, bessemer, Pittsburgh	35.00	35.00	35.00	37.50
Sheet bars, open-hearth, Pittsburgh	35.00	35.00	35.00	37.50
Billets, bessemer, Pittsburgh	35.00	35.00	35.00	37.10
Billets, open-hearth, Pittsburgh	35.00	35.00	35.00	37.10
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.90	1.95	2.00	2.05
Steel bars, Chicago	2.10	2.10	2.10	2.05
Steel Bars, Philadelphia	2.27	2.27	2.32	2.37
Iron bars, Philadelphia	2.17	2.17	2.22	2.32
Iron bars, Chicago, mill	1.95	1.90	2.05	2.15
Beams, Pittsburgh	1.90	1.95	2.00	2.00
Beams, Philadelphia	2.17	2.17	2.22	2.22
Beams, Chicago	2.10	2.10	2.20	2.10
Tank plates, Pittsburgh	1.80	1.85	1.95	1.95
Tank plates, Philadelphia	2.12	2.12	2.22	1.97
Tank plates, Chicago	2.10	2.10	2.20	2.10
Sheets, black, No. 28, Pittsburgh	3.15	3.15	3.15	3.45
Sheets, blue anl., No. 10, Pittsburgh	2.30	2.30	2.30	2.70
Sheets, galvanized, No. 28, Pittsburgh	4.20	4.20	4.25	4.60
Sheets, black, No. 28, Chicago	3.35	3.35	3.40	3.75
Sheets, blue anl. No. 10, Chicago	2.40	2.45	2.50	2.95
Sheets, galvanized, No. 28, Chicago	4.40	4.40	4.50	4.85
Wire nails, Pittsburgh	2.65	2.65	2.70	2.80
Wire nails, Chicago	2.70	2.70	2.90	3.10
OLD MATERIAL				
Heavy melting steel, Pittsburgh	19.50	19.25	17.10	18.60
Heavy melting steel, eastern Pa.	17.00	16.50	15.65	17.75
Heavy melting steel, Chicago	17.00	16.05	15.90	16.40
No. 1 wrought, eastern Pa.	18.25	18.25	18.20	18.75
No. 1 wrought, Chicago	18.75	17.45	15.90	16.70
Rails for rolling, Chicago	19.25	19.05	18.15	17.40

Composite Market Average

The Fourteen Leading Iron and Steel Products Included are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

This week (Sept. 2, 1925)	$37.21
Last week (Aug. 26, 1925)	37.21
One month ago (August, 1925)	37.39
Three months ago (June, 1925)	37.60
One year ago (September, 1924)	39.05
Ten years ago (September, 1915)	25.55
Twelve years ago (September, 1913)	25.55

Late News Flashes

Leases Slatington Mill

New York, Sept. 1.—Robert Grant of New York has leased the rolling mill at Slatington, Pa., from the Foley Steel Co. which recently went into the hands of receivers. He plans to produce iron and steel bars.

New Bar Mill to Start

Youngstown, Sept. 1.—The first of the three new bar mills, erection of which was started early this year by the Carnegie Steel Co. at the McDonald plant, will start operations within two weeks. The mill known as No. 10 is a merchant bar mill. The other mills will be ready soon.

Valley Mills Picking Up

Youngstown, O., Sept. 1.—September begins in the Mahoning valley with mill operations at about 75 per cent on the average. This is about seven per cent above the operations of the first week in July and about 15 per cent above the low mark early in June. In sheets, 106 of the 127 independent sheet mills are active.

Another Furnace Goes in

Pittsburgh, Sept. 1.—Another blast furnace, one of the Carrie group of the Carnegie Steel Co., was blown in this week. This will bring total active to 28 out of 56. The Jones & Laughlin Steel Corp. is operating eight out of 12 furnaces. The general average in steelmaking is fast approaching 75 per cent in this district, with the Carnegie Steel Co. at 71 per cent.

Penn Seaboard Will Add Mills

Philadelphia, Sept. 1.—Officers of the Penn Seaboard Steel Corp. have announced their decision to build four more bar mills at the New Castle, Del., works. The proposed units are 10, 12, 14 and 16-inch mills, to be driven by motors already ordered from the General Electric Co., Schenectady, N. Y. The Penn Seaboard company also is starting the erection of a 50-ton basic open-hearth furnace.

Chicago Output Moves Up

Chicago, Sept. 1.—The leading interest has gained a point or two in steel ingot production and is now at 78 per cent. The leading independent producer is maintaining an 80 per cent rate. The active list of steel works blast furnace stacks is unchanged at 22 out of 35. The second Youngstown Sheet & Tube Co. stack at Indiana Harbor is to be blown in as soon as possible, probably within 10 days.

Current Rolled Steel Prices

PRICES, CENTS PER POUND, UNLESS OTHERWISE STATED

Semifinished Material

Prices per gross ton

BILLETS AND BLOOMS

4 x 4-inch, base

Pittsburgh, open hearth	$35.00
Pittsburgh, bessemer	35.00
Youngstown	35.50
Philadelphia	40.30
Chicago	35.00
Forging, Pittsburgh	40.00
Forging, Philadelphia	45.30

SHEET BARS

Pittsburgh	35.00
Youngstown	33.50 to 35.00

SLABS

Pittsburgh	$35.00
Youngstown	33.50 to 35.00

WIRE RODS

¼-inch and finer

Pittsburgh	$45.00
Cleveland	45.00
Chicago	47.00

Standard extras, $2.50 per ton over ⅝-inch; $5 for screw stock; $15 for acid wire rods. Carbon extras, $3 for 0.20 to 0.40; $5 for 0.41 to 0.55; $7.50 for 0.56 to 0.75; $10 over 0.75.

SKELP

Grooved skelp, Pittsburgh	1.90c
Universal skelp, Pittsburgh	1.90c
Sheared skelp, Pittsburgh	1.90c

Structural Shapes

Pitsburgh	1.90c to 2.00c
Philadelphia	2.06c to 2.27c
New York	2.14c to 2.34c
Chicago	2.10c
Cleveland	2.09c to 2.19c
Birmingham	2.15c to 2.25c

Steel Plates

Pittsburgh	1.80c to 1.90c
Philadelphia	2.07c to 2.17c
New York	2.09c to 2.19c
Chicago	2.10c
Cleveland	1.99c to 2.09c
Birmingham	2.05c to 2.15c

Iron and Steel Bars

Pitsburgh, soft steel	1.90c to 2.00c
Pittsburgh, cold finishing	2.15c to 2.25c
Pittsburgh, forging quality	2.15c to 2.25c
Philadelphia, soft steel	2.22c to 2.32c
New York, soft steel	2.24c to 2.34c
Chicago, soft steel	2.10c
Cleveland, soft steel	2.09c to 2.19c
Birmingham, soft steel	2.05c to 2.15c
San Francisco, soft steel	2.60c
Pittsburgh, refined iron	3.00c to 4.50c
Pittsburgh, reinforcing billet	1.90c to 2.00c
Chicago, rail steel	2.00c to 2.10c
Mill, rail steel	1.90c to 2.00c
Philadelphia, common iron	2.12c to 2.22c
New York, common iron	2.14c to 2.24c
Chicago, common iron	1.95c

Hoops, Bands, Strips

Hoops, Pittsburgh, 6 inches and under	2.40c
Bands, Pittsburgh, 6 inches and under	2.40c
Hot rolled strip steel, Pittsburgh stamping quality	2.20c to 2.40c
Hot rolled strip steel, Chicago	2.40c to 2.50c
Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier, base, Pittsburgh, Cleveland	3.75c
Worcester, Mass., Chicago	4.15c

Cold Finished Steel

Cold finished steel bars, drawn or rolled Pittsburgh, Chicago, carloads	2.50c
Less carload	2.75c
Steel shaft'g turned and polished Pittsburgh, Chicago	2.50c

Screw stock base Cleveland $1 higher; and Worcester $3 higher than Pittsburgh and Chicago.

Hot Rolled Alloy Steels

Pittsburgh base

S. A. E. Series—	
2300 (3½ per cent nickel)	4.50c to 4.75c
3100 (nickel chromium)	3.50c to 3.65c
6100 (Chrome vanadium)	4.25c to 4.50c
6100 (Chrome vanad. spring)	4.00c
9250 (Silico mang. spring)	3.25c to 3.40c

Billets—4 x 4 to 10 x 10, gross ton at net ton bar price; under 4 x 4 to 2½ x 2½-inch $5 higher. Chicago base $2 higher.

Rails, Track Material

Standard bessemer rails, mill	$43.00
Standard open-h'th rails, mills	43.00
Relaying rails, St. Louis	23.00 to 31.00
Relaying rails, Pittsburgh	27.00 to 30.00
Light rails, 25 to 45 mill	1.60c to 1.70c
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	2.70c to 2.80c
Spikes, small railroad, 7-16 inch and smaller, Pitts	2.90c to 3.00c
Spikes, boat and barge, Pitts.	3.25c
Spikes, railroad, Chicago	2.90c to 3.00c
Track bolts, Pitts. standard	3.90c to 4.15c
Track bolts, Chicago	3.90c to 4.15c
Tie plates, Pittsburgh	2.35c
Tie plates, Chicago	2.35c

Wire Products

To Jobbers in Carloads

F.o.b. Cleveland and Pittsburgh base

Wire nails	2.65c
Galv'd nails smaller than 1-inch	4.90c
Galv'd nails, 1-inch and over	4.65c
Plain wire	2.50c
Annealed wire	2.65c
Galvanized wire No. 9 gage	3.10c
Barbed wire, painted	3.10c
Barbed wire, galvanized	3.35c
Polished staples	3.10c
Galvanized staples	3.35c
Coated nails, count keg	1.85c
Woven wire fencing (retailers) 12½ gage, 26-in. high 7-in. bars and 12-in. stays, per 100 rods, f.o.b. Pitts	$20.03

Joliet, DeKalb and Waukegan, Ill., and Anderson, Ind., prices $1 per ton over Cleveland-Pittsburgh base on products made there; Chicago $1 higher; Duluth $2 higher and Worcester, Mass., and Fairfield, Ala., $3 higher.

Sheets

SHEET MILL BLACK

No. 28, Pittsburgh base	3.15c to 3.25c
No. 28 Philadelphia, delivered	3.42c to 3.52c
No. 28, Gary, Indiana Harbor	3.30c to 3.35c
No. 28, Chicago, delivered	3.35c to 3.40c

TIN MILL, BLACK

No. 28, Pittsburgh	3.15c to 3.25c
No. 28, Gary base	3.35c to 3.40c

GALVANIZED

No. 28, Pittsburgh base	4.20c to 4.30c
No. 28, Philadelphia, delivered	4.47c to 4.62c
No. 28, Gary, Indiana Harbor	4.35c to 4.40c
No. 28, Chicago, delivered	4.40c to 4.45c

BLUE ANNEALED

No. 10, Pittsburgh base	2.30c to 2.40c
No. 10, Philadelphia, delivered	2.52c to 2.62c
No. 10, Gary, Indiana Harbor	2.35c to 2.45c
No. 10, Chicago, delivered	2.40c to 2.50c

AUTOMOBILE SHEETS

No. 22, Pittsburgh base	4.25c

Tin Plate

Prices per 100-pound box, Pittsburgh

Tin plate, coke base	$5.50

Gary, Ind. base 10 cents higher

Iron and Steel Pipe

Base Discounts Pittsburgh and Lorain, O. to Jobbers in Carloads

	Black	Galv.
1 to 3-inch, butt steel	62	50½
1 to 1½-inch, butt iron	80	13

Indiana Harbor, Ind., and Evanston, Ill., 2 points less and $4 per ton higher. Chicago delivered 2½ points less and $5 per ton higher.

Boiler Tubes

Less Carload Discounts—Carloads 4 Points Additional—F.o.b. Pittsburgh Mills

Steel 3¼ to 3¾-inch	38½
Charcoal iron, 3¼ to 4½-inch	5
Seamless hot rolled, 3¼ to 3½-inch	46 off

Chain, Piling, Cut Nails

Chain, 1-in. proof coil, Pitts.	6.00c
Sheet piling base, Pittsburgh	2.25c to 2.30c
Cut nails, f.o.b. mills	2.90c

Cast Iron Water Pipe

Prices per net ton

Class B Pipe

Four-inch, Chicago	$53.20 to 54.20
Six-inch and over, Chicago	49.20 to 50.20
Four-inch, Birmingham	45.00 to 46.20
Six-inch and over, Birmingham	41.00 to 42.00
Four-inch, New York	56.50 to 57.60
Six-inch and over, New York	51.50 to 52.60
Standard fittings, Birmingham, base	$110.00

6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $5 higher than Class B

Nuts and Bolts

F.o.b. basing points, Pittsburgh, Cleveland, Birmingham and Chicago.

Hot pressed square tapped or blank	$4.00 off list
Hot pressed hexagon tapped or blank	$4.40 off list
Cold punched square or hexagon blank	$4.10 off list
Cold punched square or hexagon tapped or blank	$4.10 off list
Cold punched U. S. S. semifinished hexagon nuts ⅞-inch and larger	75, 10 and 5 off
Cold punched U. S. S. semifinished hexagon nuts 9/16-inch and smaller	80, 10 and 5 off
Cold finished S. A. E. semifinished ⅝-inch and larger	75, 10, 10 and 5 off
Cold finished S. A. E. semifinished 9/16-inch and smaller	80, 10, 10 and 5 off

CARRIAGE BOLTS

(⅜ x 6", smaller and shorter)

Rolled thread	50, 10 and 10 off
Cut thread (all sizes)	50 and 10 off
Eagle carriage bolts (Eagle list)	65 and 10 off

MACHINE BOLTS

(⅜ x 4", hot pressed nuts)

Rolled thread	60 and 10 off
Cut thread (all sizes)	50, 10 and 10 off

(All sizes cold punched nuts)

Cut thread	45, 10 and 5 off
Lag screws	60, 10 and 10 off
Plow bolts Nos. 1, 2 and 3 heads	50 and 10 off
4 to 10 heads	50, 10 and 20 off
*Flat and round head stove bolts	80, 10 and 5 off
Tap bolts	80 off
Bolt ends with hot pressed nuts	50, 10 and 10 off
Bolt ends with cold punched nuts	45, 10 and 5 off
Blank bolts	50, 10 and 10 off
Rough stud bolts with nuts (250 pieces or more of a size)	40 and 10 off

*Stove bolts 80, 10 and 5 off plus 2½ in bulk

SEMIFINISHED CASTELLATED AND SLOTTED NUTS

Per 1000, f.o.b. producer's plant, freight allowed

	S.A.E. Castellated	U.S.S Slotted
¼	$ 4.40	$ 4.40
5/16	5.15	5.15
⅜	6.20	6.60
7/16	7.90	9.00
½	10.10	10.50
9/16	13.80	14.20
⅝	17.00	17.30
¾	23.50	24.00
⅞	36.00	36.00
1	55.50	58.00
1⅛	89.00	89.00
1¼	126.00	131.00
1⅜	183.50	183.50
1½	210.00	210.00

Larger sizes—Prices on application

HEXAGON CAP SCREWS

Milled	80, 10 and 5 off
Upset	80, 10, 10 and 5 off

SQUARE HEAD SET SCREWS

Milled	80 and 10 off
Upset	80, 10 and 10 off

Rivets

Structural rivets, carloads Pittsburgh and Cleveland	2.40c to 2.50c
Structural rivets, carloads, Chicago	2.60c to 2.65c
**Rivets, 7/16-in. and smaller Pittsburgh and Cleveland	70, 10 and 5 off
**Rivets, 7/16-in. and smaller Chicago	70, 10 and 5 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Washers

Wrought, c.l., Chi. dist.	$6.50 to $6.60 off
Wrough, c.l., Pitts. dist.,	6.25 off
Lock washers f.o.b. factory	85, 10 and 10 off

Pig Iron

Radiator Company Closes Around 75,000 Tons—August Sales and Shipments Are Unusually Heavy—Prices Show Steadiness

FOLLOWING unusually heavy sales and shipments of pig iron in August, the volume of business at present is less pronounced. The American Radiator Co. closed for around 75,000 tons of various grades for fourth quarter in the last few days, in some instances on advantageous terms that were extended previous to recent price revisions. Aside from that there was nothing of special importance in the market and prices generally are unchanged. August sales by Chicago interests were about three times those of July. The month's tonnage closed with interests represented at Cleveland was 210,000 tons, far exceeding that of July. Shipments from a group of a half dozen stacks were the largest in more than three years.

PITTSBURGH, Sept. 1.—Pig iron buying here originates for most part at other points, such as Springfield, Mansfield and Ravenna, O. A few consumers in those districts recently were able to close limited tonnages of foundry iron at slight concessions under the market. For instance, one or two producers are waiving 50-cent silicon differentials, selling No. 2X iron at $18.50, valley, the same figure openly quoted on No. 2 plain. Several inquiries are current here involving 50 to 150 tons. Three melters want 500 tons each, for delivery over the balance of the year. One or two want deliveries extended into January and February next year. Producers are disinterested that far ahead. Inquiries for steelmaking iron are meager, a few single carload or 100-ton lots of bessemer appearing. The selling price is $19, valley. No interest is manifested in basic, and $18, valley is quoted. One Ohio user bought 500 tons of malleable at $18.50, valley. Another nearby melter closed recently for a similar tonnage at the same figure.

Boston, Sept. 1.—Sales of foreign iron at Boston during the week totaled 6000 or 8000 tons and foreign iron shipments for Boston continue heavy. In excess of 100,000 tons of foreign iron has reached Boston so far this year. Of this amount about 40,000 tons has been India iron. Foreign iron prices are unchanged at about $21.50, delivered on cars Boston. One sale of 1.75 to 2.25 silicon at this same level is reported. Buffalo iron is selling at about $18.50, base, although several leading sellers try to hold to $19.

Philadelphia, Sept. 1.—Sales of pig iron here in the past week while small totaled 10,000 to 15,000 tons, the largest in some weeks. The J. L. Mott Iron Works, Trenton, bought 1000 tons. The market for foundry iron appears firm at $20.50, base, plus 50 cents for No. 2X, while No. 1X is $21.75 to $22. Sales of 500 to 1000 tons of low phosphorus iron are reported at unchanged prices. Basic is featureless.

Buffalo, Sept. 1.—New inquiry for pig iron totals 10,000 tons, with sales averaging 7500 tons or more a week. Foundries are asking quotations on iron for fourth and first quarter shipment. One quotation of $19 for fourth and first quarter or $19.50 for first quarter only is reported to have been made. Iron for third and fourth quarter shipment can be had for $18.50 to $19, depending upon tonnage.

Cleveland, Aug. 31.—Large sales of pig iron continue to be made for fourth quarter, contributing to the strength of the market. The American Radiator Co. has closed for 75,000 tons for various plants. For this district its purchases included 1850 tons for Springfield, O., and 9000 tons for Detroit. The latter tonnage was placed with more than one furnace. Part of it went to a lake furnace now holding to a price of $21, base, but it was taken on a quotation outstanding before the advance. Some smaller lots have been sold to Michigan melters at $21, base, while slightly more than that was obtained in one or two instances for delivery in Detroit. Another lake furnace has taken round tonnages at $20, base, for delivery in Michigan. The week's sales by blast furnaces represented here totaled 40,000 tons, and the aggregate for the month of August was 210,000 tons, a much larger tonnage than in July. A leading furnace company's shipments of pig iron in August were 10,000 tons more than in July, and the August total was the largest in more than three years.

Cincinnati, Sept. 1.—Inquiry for pig iron is broadening, and prices tend upward. Northern iron is quoted $19.50 to $20, Ironton, which is the first time in almost a year that the market here has reached the $20 level. Inquiry before the trade involves close to 5000 tons. An Indiana melter wants 500 to 1000 tons of low phosphorus iron, while the New Idea Spreader Co., Coldwater, O., is inquiring for 200 to 500 tons of foundry.

Chicago, Sept. 1.—August sales of northern iron in the Chicago district were almost three times those of July. Based upon the present rate of production, one producer is booked almost full for the remainder of the year. Spot demand continues at a high level. Inquiry includes 2000 tons of malleable for the last quarter, 1500 tons of malleable and foundry for the first quarter and 600 tons of foundry for the first quarter. Northern malleable and No. 2 foundry iron are quoted at $20.50, Chicago furbasis is quoted at $23.51, Chicago basis is quoted at $23.51, Chicago. Alabama iron is quoted at $24.01 to $24.51, Chicago.

St. Louis, Sept. 1.—The market for pig iron was quiet during the past week, the heaviest sales being made by the St. Louis Coke & Iron Co. for a total of 1600 tons of foundry iron. The market is firm at unchanged prices. Several southern makers are quoting $18.50, Birmingham, for third

Pig Iron Prices

Prices per gross tons

Bessemer, valley	$19.00
Bessemer, Pittsburgh	20.76
Basic, valley	18.00
Basic, Pittsburgh	19.76
Basic, Buffalo	18.50 to 19.00
Basic, del., eastern Pa.	20.50 to 21.00
Malleable, valley	18.50 to 19.00
Malleable, Pittsburgh	20.26 to 20.76
Malleable, Cleveland	20.00
Malleable, Chicago	20.50
Malleable, Buffalo	18.50 to 19.00
Malleable, del., eastern Pa.	21.75 to 22.25
No. 1X, eastern del., Phila.	22.26 to 22.76
No. 1X, Buffalo	19.00 to 20.00
No. 1 foundry, Chicago	21.00
No. 2 foundry, valley	18.50
No. 2 foundry, Pittsburgh	20.26
No. 2 foundry, Buffalo	18.50 to 19.00
No. 2 foundry, Chicago	20.50
No. 2 foundry, Granite City	21.50 to 22.00
No. 2 foundry, Ironton fur.	19.50 to 20.00
No. 2 foundry, Cleveland, del.	20.00
No. 2 foundry, del., Phila.	21.26
No. 2 foundry, N. J., tidewater	21.76
No. 2X, Eastern del., Phila.	21.76
No. 2X, east. N. J., tidewater	22.26
No. 2X, eastern del., Boston	23.65 to 24.15
No. 2X, foundry, Buffalo fur.	18.50 to 19.00
No. 2X, Buffalo, del., Boston	23.41 to 23.91
Continental foundry, Boston	23.50 to 24.00
No. 2 Alabama, Birmingham	18.00 to 18.50
No. 2 Alabama, Cincinnati	22.05 to 22.55
No. 2 Tenn., Birmingham	17.50
No. 2 Tenn., Cincinnati	21.55
No. 2 southern, Philadelphia	23.51 to 24.51
No. 2 southern, Chicago	23.51 to 24.51
No. 2 southern Chicago (barge and rail)	22.68
No. 2 southern, Cleveland	23.51 to 24.51
No. 2 southern Boston (rail and water)	24.41 to 25.41
No. 2 southern, St. Louis	22.67 to 24.17
No. 2X, Virginia furnace	22.50 to 25.50
No. 2X, Virginia, Phila.	27.67 to 25.67
No. 2X, Virgina, Jersey City	28.04 to 31.04
No. 2X Virginia, Boston	28.42 to 31.42
Gray forge, eastern Pa.	21.00 to 21.50
Gray forge, val. del. Pitts.	19.76
Low phos., standard, valley	28.00
Low phos., standard, Phila.	26.79
Low phos., Lebanon, furnace	23.50 to 24.50
Low phos., English, Phila.	Nominal
Charcoal, Birmingham	30.00 to 32.00
Charcoal, Superior, Chicago	29.04

Silvery iron, Jackson county, Ohio, furnace, 6 to 7 per cent $23.00 to $25.00; 8 to 9 per cent $25.50 to $27.50; 9 to 10 per cent., $27.50 to $29.50; 10 to 11 per cent, $29.50 to $31.50.

Bessemer ferrosilicon, Jackson county, Ohio, furnace, 10 to 11 per cent, $35.50; 11 to 12 per cent, $37.50; 12 to 13 per cent, $39.50.

quarter and $19 for fourth quarter. Northern iron is quoted at $20.50 to $21, Chicago, and the local maker quotes $21.50 to $22, Granite City.

Birmingham, Ala., Aug. 31.—Pig iron quotations are firm at $18.50 to $19 base, the higher price being asked for last quarter. A few inquiries have been received for iron for 1926 but prices are not quoted for the position. Reduction of surplus iron in Alabama during August is placed around 10,000 tons. Sales during the last week or two include more than 1200 tons for melters in southern Ohio. Basic iron production here still exceeds that of foundry. The local melt shows further improvement. Two furnaces in this district are to go out for repairs.

New York, Sept. 1.—The American Radiator Co. bought 10,000 tons of pig iron for Bayonne, N. J., and 6000 tons or more for Birmingham and some western plants. Otherwise sales in this territory in the past week amounted to about 10,000 tons of foundry iron. Inquiry is small. Following sales of Buffalo No. 2 and No. 2X at $18.50 furnace, two Buffalo makers are asking $19, base. Eastern Pennsylvania iron is $20.50, base furnace . Foreign competition is active. Considerable tonnage has sold at $21, delivered to consumers' yards in Providence, R. I. This is equivalent to $16.09, Buffalo and $17.35, eastern Pennsylvania furnaces. Other sales of Indian and European foundry iron are noted at $20 to $22, duty paid, tidewater, depending on the silicon. English low phosphorus iron now is obtainable at $22.50 to $23, duty paid, tidewater, but no sales are noted.

Ferroalloys

Little Activity in Market—Spiegeleisen Sells at $33

Pittsburgh, Sept. 1.—Occasional inquiries appear in the ferroalloys market, usually for a single carload or two. On ferromanganese, which recently developed several attractive tonnage inquiries, only a carload or two a week represent present sales. No price weakness is encountered from producers, though an occasional concession is made by a middle interest to move single carloads appearing on track. Occasionally a consumer receiving some material purchased some time ago at $90 to $105 will find no immediate use for it and will re-sell a small quantity at a slight concession. The usual market price is firm at $115, seaboard base. A forging plant and a nearby steel interest which are in the market for a carload of 10 to 12 per cent ferrosilicon which is quoted at $35 to $36, Pittsburgh. Spiegeleisen is featureless. Prices are unchanged.

Chicago, Sept. 1.—A sale has been made of 100 tons of 14 to 16 per cent ferrosilicon. Spiegeleisen and ferromanganese sales have been largely carloads. Ferromanganese is unchanged at $115, seaboard, while spiegeleisen ranges from $40.05 to $40.76, Chicago.

New York, Sept. 1.—Ferromanganese sales are small but present indications point to a considerable buying for last quarter. The market is firm at $115, duty paid tidewater. About 500 tons of spiegeleisen has been sold at $33, furnace for 20 per cent.

Special ferroalloys are unchanged except for strength in ferrotungsten. The latter has sold at $1.15 and other prices are heard just slightly less. Little of the comparatively low priced material appears available any longer. The ore market also is strong, with future wolframite $11.50 to $11.75 a short ton unit and spot $11.75 to $12.75, according to grade. Domestic mining interests are proposing an increase of 50 per cent in the tariff of $7.14 a short ton unit.

Ferroalloy Prices

†Ferromanganese 78 to 82 per cent, tidewater, or furnace first hand and resale	$115.00
Ferromanganese delivered Pittsburgh	119.79
Spiegeleisen 19 to 21 cent per domestic furnace or tidewater	32.00 to 33.00
Ferrosilicon, 50 per cent contract freight allowed	82.50 to 85.00
Ferrotungsten standard, cents per pound contained	1.10 to 1.15
Ferrochrome, 60 to 70 chromium, 6 to 8 carbon, cents per pound contained, delivered	11.50
Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis	3.25 to 3.90
Ferro-carbon-titanium, car lots, producer's plant, net ton	200.00
Ferrophosphorus, electrolytic, per ton, carload, 17 to 19 per cent, Rockdale, Tenn., basis (18 per cent material)	$91.00
Ferrophosphorus, electrolytic, per ton, carload, 23 to 25 per cent, f.o.b. Anniston, Ala., (24 per cent material	$122.50

†Duty paid

Coke

Stronger Market Develops as Result of Coal Strike—Furnaces and Foundries Well Covered

PIG iron and foundry interests are well protected for coke supplies and this softens the effect of the anthracite strike. Demand for coke for domestic and general heating purposes, however, has been accelerated and is strengthening the market. The spot furnace fuel price is $3.35 to $3.50. Connellsville makers are naming $3.75 on extended deliveries.

Pittsburgh, Sept. 1.—Tentative inquiries from two or three furnaces indicate apprehension concerning future coke supplies. The trade expects little buying of this character for fourth quarter because most furnaces are protected, but it looks as if purchases for first quarter will develop fair proportions. Purchases by eastern nonmetallurgical interests help the beehive market maintain its present strong position. The anthracite strike is creating a demand for coke for domestic purposes. Middle interests acting for eastern principals paid $3.10 and $3.20 last week, but consumers paid more. The spot market is $3.35 to $3.50. It is difficult to ascertain definite quotations for deliveries extended far into the future. Producers are reluctant about quoting, but $3.75 and higher tentatively are named. Heating coke is stronger because of enlarged demand. The usual figure is $3.25. Foundry coke is gaining strength; $4 as the price is disappearing and $4.25 may be minimum soon. Some makers are quoting $4.50. Premium brands are unchanged at $5.

Production of coke in the Connellsville region for the week ended Aug. 22 was 88,100 tons, compared with 75,340 tons in the preceding week, according to the *Connellsville Courier*.

New York, Sept. 1.—Spot coke buying is improving. Beehive foundry is $4.50 to $5.25, Connellsville. By-product coke is $10.41, delivered at Newark and other northern New Jersey points.

Chicago, Sept. 1.—By-product foundry coke is being quoted at $9.75, Chicago ovens, for September delivery. This is an extension of the August price.

St. Louis, Sept. 1.—The St. Louis Coke & Iron Co. has increased the price of its domestic coke 25 cents a ton, effective Sept. 1. Demand for foundry grades continues active. Shipments from by-product ovens in the district during August were exceedingly heavy.

Coke Prices

Beehive, Ovens

Prices per net ton

Connellsville furnace	$ 3.35 to 3.75
Connellsville, foundry	4.00 to 4.50
New River foundry	7.50 to 8.00
Wise county furnace	3.75 to 4.25
Wise county foundry	4.50 to 5.25
Alabama foundry	4.50 to 5.00
Alabama furnace	4.00 to 4.50

By-Product

Foundry, Newark, N. J.; del.	$10.41
Foundry, Chicago, ovens	9.75
Foundry, New England, del.	12.00
Foundry, St. Louis	10.00
Foundry, Granite City, Ill.	9.50
Foundry, Birmingham	4.50 to 5.00

Plates

Material for Tanks and Locomotives Features Market—Fair Size Tonnages Placed

WHILE demand for plates is less than for shapes and bars, fair size tonnages are being placed this week, principally for tank and locomotive work. The building industry also is taking a considerable amount. Bids are going in this week on the big Ashland, Calif., pipe line, which will involve 80,000 tons. Prices continue on a basis of 1.80c to 1.90c, Pittsburgh.

PLATE PRICES, PAGE 578

Philadelphia, Sept. 1.—While one eastern plate mill had the largest week of the year in August, with August sales equaling those of July, others did less. Hence order books generally lost some ground. Finishing operations are 40 to 60 per cent in the East. No important buying is noted. The usual price is 1.80c, Pittsburgh, with some exceptions.

Boston, Sept. 1.—Plate inquiry shows some improvement but prices are weak. One producer has offered round tonnages at 1.75c, Pittsburgh. Other makers hold firm at 1.80c.

Buffalo, Sept. 1.—It is reported 2.115c, Buffalo, or 1.85c Pittsburgh has been quoted on medium tonnages of plates and 2.065c on larger lots. Demand is light.

Pittsburgh, Sept. 1.—Because demands upon steelmakers for plates are not so heavy as in other lines, satisfactory deliveries still can be had. Buying still is piecemeal for immediate shipment. Miscellaneous demand from three or four consumers such as boiler shops, railroad car and locomotive shops is fair; as far as barges and oil storage tanks are concerned little or nothing is being done. The Pittsburgh-Des Moines Steel Co. at its Des Moines, Ia. office received an order for five 37,500-barrel tanks for Texas installation. While prices as low as 1.70c have been named in some eastern negotiations nothing under 1.80c to 1.90c has been quoted here.

Cleveland, Sept. 1.—The plate market has been unaltered the past week with a fair tonnage moving and prices of 1.80c to 1.90c, Pittsburgh. The price situation is spotty and the minimum figure is not so freely available in some sections as in others. Pending locomotive work for the Chesapeake & Ohio and New York Central railroads involves from 4000 to 5000 tons. A lot of 550 tons of oil refinery stills has been placed and a new inquiry for 450 tons of similar character is out. No further developments have taken place in pending lake vessels.

Chicago, Sept. 1.—Demand for plates is less than that for bars or shapes, but is fair considering the dearth of railroad business. Oil storage tank business is the backbone of the market. The independent maker has booked 1000 tons for miscellaneous jobs. A Pacific coast tank inquiry specifies 3000 tons of plates and one from Houston, Tex., 1300 tons. The building industry is taking a good tonnage of plates, which continue to be quoted at 2.10c, Chicago.

New York, Sept. 1.—Plate sales are somewhat better, but restricted to immediate shipment. The weak tendency apparently has been arrested. Usual sales are at 1.80c to 1.90c Pittsburgh. Ossasionally 1.75c or less is done.

CONTRACTS PLACED

750 tons, five 37,500-barrel tanks for Texas installation, to the Pittsburgh-Des Moines Steel Co., Des Moines, Iowa.

550 tons, for oil refinery stills for the Henry Vogt Machine Co., Louisville.

CONTRACTS PENDING

2500 tons gas holder for Western States Gas & Electric Co., Stockton, Calif. Bids being received.

1500 tons penstock for South San Joaquin Irrigation District, Manteca, Calif. Bids Oct. 15.

450 tons, for miscellaneous refinery work for Standard Oil Co. of Indiana.

200 tons refining plant for Olympic Calpet Refining Co., Seattle, Wash. Bids in. General contract to Cornell Bros. & Walsh.

American Railway Car Institute Organized

New York, Sept. 1.—The Railway Car Manufacturers association terminated its activities Sept. 1, and will be succeeded by the American Railway Car institute. The former was organized in 1915 and was comprised of corporate members, serving the carbuilding industry. The new organization is to be one of individuals. It will be patterned along the lines of the American Iron and Steel institute. It is believed greater flexibility and interest will develop. The institute takes the assets and liabilities of the former organization. W. F. M. Goss, president of the Railway Car Manufacturers association, has retired, and J. M. Hansen, chairman of the board of the Standard Steel Car Co., will head the institute. W. C. Tabbert, who was secretary of the association, will hold the same position with the institute.

Semifinished

More Interest Shown in Billet Orders—Sheet Bars Are Quiet—Specifications Fair

A LARGER number of inquiries and specifications for rerolling billets have come out in the Pittsburgh district, and some fair size orders have been placed. The same mills report a lack of interest in sheet bars. While the quotable level on the three grades remains $35, Pittsburgh, valley mill prices range from $33.50 to $35. Operations are well sustained by specifications.

SEMIFINISHED STEEL PRICES, PAGE 578

Youngstown, O., Sept 1.—Current business in semifinished continues to be done on specifications against contracts or open orders. Virtually no new sales are being made. On specifications $35, Youngstown remains the going price on sheet bars and $33.50 to $35, Youngstown on slabs and large billets. If an attractive tonnage should come up for action, it is a question whether these prices would prevail.

Philadelphia, Sept. 1.—Several small sales of billets are noted while a local consumer took considerable tonnage. The usual price is $35, Pittsburgh, for rerollers, and $40 for forging. A South Chester tube mill recently bought considerable skelp.

Pittsburgh, Sept. 1.—Inquiries for rerolling billets, and specifications on contracts again are featured in this week's market. Sheet bar buyers continue to negotiate, but defer action for a price lower than $35, Pittsburgh, which also is the quotable level on slabs and billets. Inquiries for the latter developed this past week involved 1500 or 3000 tons at a time, one or two having developed orders. One scrap interest is asking protection on 3000 tons of 1¾-inch bessemer rerolling billets. Forging billets continue active, particularly in lots of 100, 200 or 300 tons. Specifications against $40 contracts are fair. Wire rod buying continues at a good rate, $45 applying. Specifications come in regularly from large users such as chain and rivet makers. Skelp is inactive except for an occasional wheel skelp specification and those filed with regular sources of supply on tubular skelp. The 1.90c price generally is quoted.

Iron and Steel Scrap Prices

Corrected to Tuesday Noon. Gross Tons Delivered to Consumer

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	**13.00 to 14.00**
Boston (dealers)	11.50 to 13.00
Buffalo	17.50 to 18.00
Chicago	17.00
Cincinnati (dealers)	14.00 to 14.50
Cleveland	17.25 to 17.75
Detroit	15.00 to 15.50
Eastern Pennsylvania	17.00 to 17.50
Bethlehem delivery	16.00 to 16.50
New York (dealers)	12.50 to 13.00
Pittsburgh	19.00 to 19.50
St. Louis	15.50 to 16.00
Valleys	18.50 to 19.00

COMPRESSED SHEETS

Buffalo	16.00 to 16.50
Chicago	14.50 to 15.00
Cleveland	15.50 to 16.00
Detroit	13.50 to 14.00
Pittsburgh	17.50 to 18.00
Valleys	17.00 to 17.50

BUNDLED SHEETS

Buffalo	13.75 to 14.25
Cincinnati (dealers)	11.00 to 11.50
Cleveland	13.00 to 13.50
Eastern Pennsylvania	14.50
Pittsburgh	16.50 to 17.00
St. Louis	10.25 to 10.75
Valleys	14.25 to 14.75

SHEET CLIPPINGS, LOOSE

Chicago	9.00 to 9.50
Cincinnati	11.00 to 11.50
Detroit	10.25 to 10.75

STEEL RAILS, SHORT

Birmingham	**13.00 to 14.00**
Buffalo	17.00 to 17.25
Chicago	20.50 to 21.00
Cincinnati (dealers)	17.00 to 18.00
Cleveland (over 6 ft.)	17.00 to 17.50
Detroit	**17.00 to 17.50**
St. Louis	20.00 to 20.50

STOVE PLATE

Birmingham	13.00 to 13.50
Boston (consumers)	**13.50 to 14.00**
Buffalo	15.00 to 15.50
Chicago	17.25 to 17.75
Cincinnati (dealers)	11.00 to 11.50
Cleveland	13.50 to 13.75
Detroit (net tons)	13.50 to 14.00
Eastern Pennsylvania	14.50 to 15.00
New York (dealers)	10.50 to 12.00
Pittsburgh	14.00 to 14.50
St. Louis	15.00 to 15.50

LOW PHOSPHORUS

Buffalo	19.50 to 20.00
Cincinnati (dealers)	**15.00 to 15.50**
Eastern Pennsylvania	21.00
Pitts. billet and bloom crops	23.00 to 23.50

SHOVELING STEEL

Chicago	16.75 to 17.00
Pittsburgh	13.00 to 13.50
St. Louis	15.50 to 16.00

KNUCKLES, COUPLERS, SPRINGS

Chicago	20.00 to 20.50
Eastern Pennsylvania	20.00 to 20.50
Pittsburgh	21.50 to 22.00
St. Louis	18.00 to 18.50

FROGS, SWITCHES, GUARDS

Chicago	18.50 to 19.00
Eastern Pennsylvania	**15.00 to 16.00**
St. Louis	19.00 to 19.50

ANGLE BARS—STEEL

Buffalo	**16.50 to 17.00**
Chicago	20.25 to 20.75
St. Louis	18.50 to 19.00

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	**12.00 to 13.00**
Boston (dealers)	**13.50 to 14.00**
Buffalo, No. 1	15.50 to 16.00
Buffalo, No. 2	17.00 to 17.50
Chicago, No. 1	18.75 to 19.25
Chicago, No. 2	16.50 to 17.00
Cincinnati, No. 1 (dealers)	**10.50 to 11.00**
Cleveland, No. 1	13.50 to 14.00
Eastern Pennsylvania	**18.00 to 18.50**
New York, No. 1 (dealers)	15.50 to 16.00
Pittsburgh, No. 1	15.50 to 16.00
Pittsburgh, No. 2	19.00 to 19.50
St. Louis, No. 1	15.00 to 15.50
St. Louis, No. 2	15.50 to 16.00

WROUGHT PIPE

Boston(dealers)	10.50 to 11.00
Buffalo	15.00 to 15.50
Eastern Pennsylvania	16.50 to 17.00
New York (dealers)	**11.75 to 12.25**

YARD WROUGHT

Boston	12.00 to 12.50
Eastern Pennsylvania	17.00 to 18.00

BUSHELING

Buffalo	15.50 to 16.00
Chicago, No. 1	15.00 to 15.50
Chicago, No. 2	10.25 to 10.75
Cincinnati, No. 1 (dealers)	10.50 to 11.00
Cleveland, No. 1	14.50 to 15.00
Cleveland, No. 2	13.50 to 14.00
Eastern Pennsylvania	**14.00 to 15.00**
Pittsburgh, No. 1	14.00 to 14.50
St. Louis, No. 1	13.50 to 14.00

MACHINE SHOP TURNINGS

Birmingham	**7.00 to 8.00**
Boston (chemical)	8.75 to 9.25
Buffalo	12.50 to 13.00
Chicago	9.75 to 10.25
Cincinnati (dealers)	10.50 to 11.00
Cleveland	14.50 to 15.00
Detroit	11.00 to 11.50
Eastern Pennsylvania	14.00
New York (dealers)	9.50 to 10.00
Pittsburgh	15.00 to 15.50
St. Louis	8.75 to 9.25
Valleys	14.50 to 15.00

CAST IRON BORINGS

Birmingham (chemical)	**15.00 to 16.00**
Birmingham (plain)	7.00 to 8.00
Boston (chemicals)	10.00 to 11.00
Boston (dealers)	8.50 to 9.00
Buffalo	12.75 to 13.25
Chicago	13.50 to 14.00
Cincinnati (dealers)	10.50 to 11.00
Cleveland	14.50 to 15.00
Detroit	11.50 to 12.00
Eastern Pennsylvania	15.00
Eastern Pennsylvania (chem.)	16.00 to 16.50
New York (dealers)	9.25 to 9.50
Pittsburgh	15.00 to 15.50
St. Louis	12.00 to 12.50
Valleys	15.00 to 15.25

MIXED BORINGS AND TURNINGS
For blast furnace use

Boston (dealers)	8.00 to 8.50
Buffalo	12.50 to 13.00
Cincinnati (dealers)	10.50 to 11.00
Cleveland	14.50 to 15.00
Detroit	11.50 to 12.00
Eastern Pennsylvania	12.00 to 13.00
New York (dealers)	8.75 to 9.25
Pittsburgh	13.00 to 13.50

PIPES AND FLUES

Chicago	13.00 to 13.50
Cincinnati (dealers)	9.50 to 10.00
Cleveland	12.00 to 12.50
St. Louis	13.00 to 13.50

RAILROAD GRATE BARS

Buffalo	14.50 to 14.75
Chicago	17.50 to 18.00
Cleveland	13.50 to 13.75
Eastern Pennsylvania	14.50 to 15.00
New York (dealers)	11.50 to 12.00
St. Louis	14.00 to 14.50

FORGE FLASHINGS

Boston (dealers)	10.00 to 10.50
Buffalo	14.00 to 14.50
Chicago	11.50 to 12.00
Cleveland (under 10 in.)	14.25 to 14.75
Cleveland (over 10 in.)	13.00 to 13.50
Detroit	12.00 to 12.50
Pittsburgh	**12.50 to 13.00**

FORGE SCRAP

Boston (dealers)	10.00 t o10.50
Chicago	20.75 to 21.25
Eastern Pennsylvania	14.50 to 15.00

ARCH BARS AND TRANSOMS

Chicago	23.75 to 24.25
St. Louis	22.00 to 22.50

Iron and Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	**9.00 to 9.50**
Buffalo	14.50 to 15.00
Chicago	14.50 to 15.00
Cleveland	16.00 to 16.25
Eastern Pennsylvania	15.00 to 15.50
Pittsburgh	17.50 to 18.00
St. Louis	12.50 to 13.00

STEEL CAR AXLES

Birmingham	16.00 to 17.00
Boston (shipping point)	17.50 to 18.00
Buffalo	18.50 to 19.00
Chicago	20.00 to 20.50
Cleveland	17.50 to 18.00
Eastern Pennsylvania	24.00 to 25.00
Pittsburgh	22.00 to 22.50
St. Louis	21.00 to 21.50

SHAFTING

Boston (shipping point)	17.50 to 18.00
Chicago	20.50 to 21.00
Eastern Pennsylvania	23.00 to 24.00
New York (dealers)	18.00 to 19.00
St. Louis	16.50 to 17.00

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	**15.00 to 16.00**
Boston (consumers)	17.50 to 18.00
Buffalo, iron	16.00 to 16.50
Buffalo, steel	18.00 to 18.50
Chicago, iron	18.00 to 18.50
Chicago, steel	20.25 to 20.75
Cincinnati	**13.50 to 14.00**
Eastern Pennsylvania	17.00 to 18.00
New York iron (dealers)	14.00 to 15.00
Pittsburgh, iron	17.50 to 18.00
Pittsburgh, steel	21.50 to 22.00
St. Louis, iron	18.50 to 19.00
St. Louis, steel	19.00 to 19.50

NO. 1 CAST SCRAP

Birmingham, cupola	16.00 to 16.50
Boston	**19.00 to 19.50**
Buffalo	17.00 to 17.50
Chicago, No. 1 machinery	20.75 to 21.25
Chicago No. 1 railroad or agricultural	19.75 to 20.25
Cincinnati No. 1 Machinery cupola (net tons dealers)	19.00 to 19.50
Cleveland, cupola	18.00 to 18.50
Detroit (net tons)	15.50 to 16.00
Eastern Pennsylvania, cupola	17.50 to 18.25
New York, cupola (dealers)	15.00 to 15.50
Pittsburgh, cupola	17.50 to 18.00
San Francisco, delivered	**20.00 to 21.00**
Seattle	**18.00**
St. Louis, railroad	18.00 to 18.50
St. Louis, agricultural	18.00 to 18.50
St. Louis, machinery	**19.00 to 19.50**
Valleys	18.00 to 18.50

HEAVY CAST

Boston	**14.50 to 15.00**
Buffalo (breakable)	15.00 to 15.50
Cleveland	12.00 to 12.50
Detroit (automobile) (net ton)	20.50 to 21.00
Eastern Pennsylvania	17.00 to 17.50
New York (dealers)	14.50 to 15.00
Pittsburgh	16.50 to 17.00

MALLEABLE

Boston, railroad	18.50 to 19.25
Buffalo	19.00 to 19.50
Chicago, agricultural	17.75 to 18.25
Chicago, railroad	19.50 to 20.00
Cincinnati, railroad (dealers)	14.00 to 14.50
Cincinnati, agricultural (dealers)	15.50 to 16.00
Cleveland, agricultural	18.00 to 18.50
Cleveland, railroad	18.75 to 19.25
Detroit	**16.00 to 16.50**
Eastern Pennsylvania, railroad	**15.00**
Pittsburgh, railroad	19.50 to 20.00
St. Louis, agricultural	14.50 to 15.00
St. Louis, railroad	17.00 to 17.50

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	**15.00 to 16.00**
Boston (dealers)	**12.00 to 12.50**
Buffalo	17.00 to 17.25
Chicago	19.25 to 19.75
Cleveland	17.00 to 17.50
Eastern Pennsylvania	18.00 to 18.50
New York	**15.50 to 16.00**
Pittsburgh district	20.50 to 21.00
St. Louis	20.00 to 20.50

LOCOMOTIVE TIRES

Chicago, No. 1	18.00 to 18.50
Chicago, cut	20.50 to 21.00
St. Louis, No. 1	17.50 to 18.00

LOW PHOSPHORUS PUNCHINGS

Chicago	19.25 to 19.75
Eastern Pennsylvania	19.00 to 20.00
Pittsburgh	21.50 to 22.00

Scrap

Market Balances Without Definite Trend—Little Buying by Consumers

LACK of definite indications in the market for iron and steel scrap makes it difficult to determine the trend. Cross currents indicate a waiting attitude and the occasional advances are not indicative of actual strength. Neither do the few declines argue weakness. Dealers seem more intent on buying than selling, which is an indication of probable strength.

Chicago, Sept. 1.—Iron and steel scrap as a whole has developed weakness but some grades have advanced. Weakness in the markets immediately to the East and failure of consumers to buy as heavily as expected have injured the undertone, yet so far as known no short selling has developed. Heavy melting steel is at $17 and it is understood several independent melters will buy at this level. On a recent closing the Illinois Central obtained $21.30, tracks, for coil springs and $20.15 for its cast.

The Hyman-Michaels Co., Chicago, has closed with the Louisville & Nashville railroad for 15,000 tons of relaying rails of various sections.

Boston, Sept. 1.—Several round tonnage sales of accumulated scrap on the part of railroads and manufacturers have stimulated the market.

New York, Sept. 1.—Firmness again characterizes scrap prices. In fact, there have been few declines in the past two weeks, and no marked change within several. One reason for this scarcity is said to lie in the fact that prices even through the relatively dull period of the past few months have not sunk low.

Philadelphia, Sept. 1.—An eastern mill has bought a round tonnage of heavy melting steel at $17.50 delivered and another has offered $17 but not much is available at this figure. Another consumer has bought considerable stove plate at $15. Scrap is more active but lacks volume.

Pittsburgh, Sept. 1.—Scrap dealers are devoting attention to placing bids on railroad scrap lists rather than to efforts to sell scrap. Sales are, and usually involve small tonnages. Another sale of specialties was arranged and it is understood the figure was slightly above $22, but $21.50 to $22 continues the generally quoted market. Since a sale estimated at 15,000 to 20,000 tons to a West Virginia user of heavy melting steel scrap at $19, compressed sheets at $18, and bundled sheets at $17, no large orders have been placed.

Cincinnati, Sept. 1.—Strength which dominated the iron and steel scrap market recently, appears to be ebbing. Shipments the past week, were 25 to 35 per cent less than for the week previous. Most consumers have requested dealers to hold back shipments temporarily.

Buffalo, Sept. 1.—Dealers continue to buy all reasonably priced offerings of scrap and in some instances are paying more than top offers of consumers. Anticipation of a brisk buying market this fall is responsible for this situation. Dealers will pay $17.50 or more for heavy melting steel and are predicting early purchases by consumers at prices above $18. One melter would pay $18.25 now, it is reported.

Detroit, Sept. 1.—Some grades of iron and steel scrap are slightly stronger while others have weakened. Heavy melting steel is moving steadily and shows an advance of 50 cents.

For the first time in many weeks the cast grades are showing signs of activity and quotations have advanced 50 cents.

St. Louis, Aug. 31.—The market for iron and steel scrap continues stronger and higher, advances during the last week ranging from 25 cents to $1 a ton. Higher prices in Chicago and the Eastern markets are a factor, as is the feeling that consumers who have been out of the market for some time, will resume buying soon. Railroad lists include Louisville, Henderson & St. Louis, 2000 tons of relaying rails; Pennsylvania System, 32,000 tons; Chicago, Milwaukee & St. Paul. 5700 tons; Wabash, 225 tons; Missouri Pacific, 3500 tons; Big Four, 2400 tons.

Birmingham, Ala., Aug. 31.—Considerable old material is moving but the market is slow. Quotations are unchanged. Quantities of heavy melting steel are being moved by reason of recent purchases of the Steel corporation subsidiary here.

Cleveland, Sept. 1.—Iron and steel scrap transactions continue largely in the hands of dealers. Consumer interest is of little moment, although shipments on contract are being accepted freely. Prices continue to hold at unchanged levels.

Sheets

Mills Receiving Good Orders and Specifications—Deliveries Are Slower—Prices Firm

SOME further improvement is noted in the sheet market. Mills are receiving a larger volume of new orders and specifications. It is more difficult to obtain spot material from certain makers. In some instances orders have been placed for fourth quarter at more than current minimum prices. Motorcar builders continue to take unusually heavy tonnages for the season.

SHEET PRICES, PAGE 578

Pittsburgh, Sept. 1.—As far as volume is concerned, the situation as regards sheets is vastly better than for some time past, and the price situation gradually is improving from the producers' standpoint. Deliveries are becoming slightly slower and some users are apprehensive concerning fourth quarter deliveries. Some middle western mills now are naming four to six weeks. A few users are placing contracts for fourth quarter at advances of $2 or $3 per ton over present market minimums. Makers generally are more satisfied with the way their customers have been buying throughout the year, furnishing actual specifications but not contracting. The automobile trades' requests for tonnages keep up in a remarkable way for this season of the year. Agricultural implement business is furnishing some attractive tonnages. Orders for sheets used in the building and roofing trades are more numerous and larger than a few weeks ago. Specifications for fair size lots to be used on stoves for delivery next spring are commencing to appear from that industry. Some plants are able to operate 60 per cent of capacity while some in the specialty group are running 80 to 85 per cent. Some important mills state that shipments for August will exceed August of 1924 by 40 or 45 per cent and will be fully as high as July of this year. September also will be a large shipping month.

Boston, Sept. 1.—Sheet prices which firmed up in New England a week ago are again softer. Specifications on contract for galvanized sheets at 4.20c, Pittsburgh, are coming in slowly and new contracts are being entered at slight concessions. Black sheets are firm at 3.20c.

Chicago, Sept. 1.—Eastern sheetmakers figure in the western market less frequently. While sheet prices have not advanced, they grow slightly firmer each week. The leading independent is operating at about 80 per cent, or as high as labor and weather conditions permit. Most orders are specified for more speedy delivery than is possible. Consumers' stocks are low. Prices are unchanged on the delivered-Chicago base of 3.35c to 3.40c for black, 4.40c to 4.45c for

galvanized and 2.40c to 2.50c, for blue annealed.

Buffalo, Sept. 1.—Sales of several 100-ton lots of sheets are reported in this district, and some larger inquiries are pending. Mill schedules are comfortably filled for the balance of the quarter. Large consumers have little difficulty in buying black sheets at 3.15c Pittsburgh and galvanized at 4.20c. Fourth quarter inquiry is beginning to develop. Third quarter prices are being quoted on this inquiry by some sellers.

Philadelphia, Sept. 1.—Sheet sales are smaller, most large consumers being covered for the remainder of the year. Specifications are good. Eastern mills are operating 65 to 75 per cent. Prices are 2.20c to 2.30c, Pittsburgh, for blue annealed; 3.10c to 3.20c for black and 4.20c to 4.30c for galvanized. The tendency is toward 4.30c as minimum on galvanized.

Youngstown, O., Sept. 1.—Valley sheet mills continue to get into a more comfortable position as incoming tonnage holds up and new business is slightly in excess of shipments. While it cannot be said there is any difficulty in getting prompt deliveries, the mills are not so free to meet all immediate demands upon them. Sheet mill operations are the best in many weeks or approximately 85 per cent. Prices are steadier although there is some moving away from the minimum figures of 4.15c, Pittsburgh on black, 4.20c, Pittsburgh on galvanized and 2.30c, Pittsburgh on blue annealed. Forward buying is lacking.

Tin Plate

New Orders Heavy—Output For Year May Set New Record

TIN PLATE PRICES, PAGE 578

Pittsburgh, Sept 1.—New orders, additions to old orders and heavy specifications in the tin plate industry presage a record-breaking year for production and shipments. The American Sheet & Tin Plate Co. continues to operate about 86 per cent of capacity but will probably take off the seventeenth turn this week. It has enough business in hand to assure a good operating rate well into, if not entirely through October. The crop situation is favorable and the vegetable packs this year will doubtless be the heaviest on record. The tin plate price is unchanged at $5.50 per base box.

Strip Steel

Demand Largely Increased Over Last Year—Some Large Lots

STRIP PRICES, PAGE 578

Pittsburgh, Sept. 1.—With automobile manufacturers and automotive parts makers ordering heavily in both hot and cold strip steel, and with other consuming lines sending in larger quantities, strip steel makers are encouraged. One important maker is doing twice as much business as last year and is operating at higher than 75 per cent of capacity. Others average 60 per cent. Several 500-ton lot orders have been noted recently, with a few for 1000 tons or more. Some contracts for last quarter have been signed. Hot strips are quoted at 2.20c, and cold at 3.75c.

Pipe

Eastern Buyers Pay Premium for Prompt Delivery of Cast Iron Pipe

MODERATE activity is reported in the market for pipe. Orders for line pipe placed with Pittsburgh mills during the week make up a considerable tonnage. The leading interest booked two sales involving a total of 10,000 tons. A premium is being paid in the East in some instances for prompt delivery of cast iron pipe, shops being booked two months ahead.

PIPE PRICES, PAGE 578 AND 614

New York, Sept. 1.—Trading in cast iron pipe is featureless, although the volume is well sustained and prices are firm. The largest municipal tonnage pending is that for the local department of water supply, gas and electricity, involving 9000 tons, and on which bids will be closed around the middle of the month, as previously noted. Shops are booked up about three months ahead on most sizes.

Boston, Sept. 1.—Deliveries on cast iron pipe have slowed down during the week. Foundries are particularly well booked for 6-inch pipe and are quoting 90 and 120 days delivery. Nearby shipments command a premium of at least $1. One sale of 6-inch pipe is reported at $58.10 delivered. Both sales and inquiry are quiet. A suburb of Portland, Me., is preparing specifications for six miles of water supply pipe.

Birmingham, Ala., Aug. 31.—Makers of cast iron pressure pipe have business in hand and in sight which will warrant active operation of plants practically through the year. Quotations are firmer, and $41 is being asked on pipe 6 inches and over. Shipments equal the make.

Pittsburgh, Sept. 1.—Lacking large orders, pipe business continues to develop at a fair rate. Two recent orders for line pipe coming to the National Tube Co. involved a total of 10,000 tons, but the majority of orders are for much smaller amounts, particularly with the recent slight slump in oil. September is scheduled to bring about an upturn in standard full weight merchant pipe and all jobbers are looking to their stocks. Some fair size orders lately have been received involving from 50 to 500 tons at a time. Pipe mills are averaging 85 or 90 per cent of capacity, some of the larger companies fluctuating between 75 and 80 per cent.

Chicago, Sept. 1.—The expected fall dip in cast iron pipe has not yet fully materialized although shipments about balance bookings. Most new business consists of contractor's lettings. Pipemakers are booked forward over 60 days on an average. The general market is holding close to $42, Birmingham, or $50.20, Chicago, on pipe 6 inches and over.

CONTRACTS PLACED

550 tons, North Riverside, Ill., to United States Cast Iron Pipe & Foundry Co.
128 tons of 4 to 8-inch pipe for Modesto, Calif., to McWane Cast Iron Pipe Co.
100 tons, Quincy, Ill., to National Cast Iron Pipe Co.

CONTRACTS PENDING

1140 tons, Chicago; bids Sept. 2.
555 tons, Mundelein, Ill. Bids Aug. 28.
Tonnage unstated, Kohler, Wis.; bids shortly.

Will Build Pipe Plants for New Process

R. D. Wood & Co., Philadelphia, are planning the construction of a plant at Florence, N. J., to manufacture centrifugal pipe in sand molds. This process which consists of introducing a predetermined amount of molten iron into a hollow sand mold, rotated at high speed causing the metal to form a hollow pipe without a core, has been called the sand spun process. The new foundry contemplated by R. D. Wood & Co. will have a capacity of 400 tons per day. This with a shop now being erected by the American Cast Iron Pipe Co., Birmingham will increase the capacity of the country for manufacturing this class of pipe to 900 tons per day.

Experimental work tending to the perfection of this process has been carried on for a number of years by the American Cast Iron Pipe Co. Associated with the company in the development work are a number of other manufacturers, among whom are R. D. Wood & Co., Philadelphia; Warren Foundry & Pipe Co., Phillipsburg, N. J.; Donaldson Iron Co., Emaus, Pa.; Lynchburg Foundry Co. and Glamorgan Pipe & Foundry Co., both of Lynchburg, Va. It is reported the four latter companies also may

erect plants to produce pipe by the new process after they have had opportunity to observe the results of the operations of the other two shops.

Bolts, Nuts, Rivets

Third Quarter Price Likely To Rule for Fourth

NUT AND BOLT PRICES, PAGE 578

Chicago, Sept. 1.—With the possible exception of stove bolts, which may go higher, quotations on bolts and nuts for third quarter seem likely to go over unchanged into the fourth quarter. Specifications continue good and as implement works get into the fall swing, demand will improve decidedly. Small rivets range from 70 and 10 off to 70, 10 and 5 off. Large rivets are weak but it is claimed that 2.60c, Chicago, is the minimum.

Pittsburgh, Sept. 1.—While some nut, bolt and rivet plants are able to operate only 40 per cent, other average 60 or 65 per cent, fair business developing each day. At least two rivet plants in this district are down entirely. Rivets are quoted at 2.40c to 2.50c, some structural shops and railroads buying occasionally at the 2.50c price. One important producer states that August shipments will exceed July, which in turn were greater than those of June.

Iron Ore

Sales Still Small—5 Per Cent Advance of Freight Rates Proposed

Cleveland, Sept. 1.—Sales of Lake Superior iron ore are of small proportions, the fall buying anticipated by some interests not yet having developed, although the indications are more favorable. A buyer closed for 25,000 tons with one shipper and other orders during the week brought the shipper's sales to 50,000 tons. This is representative of the market. Some consumers indicate that they will buy more heavily later on to obtain this season's prices.

The Lake Superior ore producers are interested in the western railroads' effort to obtain a 5 per cent increase in rates, as the railroads include iron ore in their propsed schedules. A committee of ore producers here has been watching the situation and probaly some of the traffic agents will be represented at the meeting of carriers and shippers in Chicago, Sept. 8.

Ovens Being Started

The Hudson Valley Coke & Products Co. has started warming up its coke ovens at Troy, N. Y., and expects to have the entire bank under production by October 1. Water gas is being made to assist in the warming up process, thus cutting down the length of time required. The company has begun the selling of domestic coke.

Bars

Demand Is Causing Deliveries to Lag—Large Mills Stiffen on Price

BOOKINGS of soft steel bars have been better the past week than for a long period. As a result mills are becoming filled and deliveries no longer are at will of buyers. One interest has one of its mills full for 60 days. Three to four weeks is the best offered in most cases. Second buying for last half is being done in some cases. Large makers are firmer at 2.00c,

BAR PRICES, PAGE 578

Chicago, Sept. 1.—August was a good month in soft steel bars, bookings showing a gain in every week but the third and the last week proving the best of the four. Orders sent to mills in the last week of the month exceeded any week since April. Specifications for the month were 50 per cent heavier than in July. New business has been running ahead of shipments, at the present rate of operations, but mills have kept all customers satisfied and deliveries have not become appreciably deferred. Implement and tractor makers continue to buy more heavily than since 1920, with one large interest already supplementing its last half order. Billet bars for concrete reinforcing show good demand. Soft steel bars are unchanged at 2.10c, Chicago.

With rails advancing, rail steel has taken an advance to 2.10c, Chicago. Attractive business still commands 2.00c, however. One Chicago Heights mill is on double turn and one on single. Bar iron bookings are only fair, with 1.95c the top of the market and some business still going at 1.90c.

New York, Sept. 1.—Several makers have refused to accept steel bars the past several days under 2.00c, Pittsburgh. Therefore, 1.90c is a lesser factor. Several makers now are unable to promise deliveries under three to four weeks, as a result of which consumers are specifying further ahead than formerly.

Buffalo, Aug. 31.—Bar prices have steadied at 2.265c, Buffalo, with no confirmed reports of shading. Inquiry for fourth quarter shipment is coming in and is being met with current quotations. Inquiry and sales are slightly improved.

Cleveland, Sept. 1.—A firmer tone in steel bars is to be noted this week as larger mills are taking a stronger position to hold to 2.00c, Pittsburgh or 2.19c, Cleveland as the common open price. It has recently appeared that 1.90c, Pittsburgh, at which some of the more attractive tonnages have been going might become the general quotation. The bar market appears to be gaining strength weekly as new tonnage is liberal and at a sustained rate of increase in August which ran in this district at 20 to 50 per cent over July. Buyers are showing more disposition to bring out larger lots in the hope of developing concessions.

Pittsburgh, Sept. 1.—Because delivery in merchant steel bars is tightening, orders are becoming more numerous and are extending further into the future with any other steel product except tin plate. Deliveries are now three or four weeks deferred in most cases, and in some instances four to six weeks' deliveries are noted. In fact, one large steel company has its 12-inch mill scheduled fully to Oct. 31. Other mills are losing business almost daily because they cannot make satisfactory deliveries, Oct. 1 being the earliest date. Several mills, including the Carnegie Steel Co., are quoting the market at 2.00c; others still are meeting 1.90c.

Cold Finished Steel

Orders Increasing In Number and Size—Prices Steady

Pittsburgh, Sept. 1.—Orders for cold-finished bars are growing in number and volume so that conditions the past week or 10 days are much better than for two months. The operating rate has increased 10 to 15 per cent and now mills average 60 to 65 per cent of capacity. Unusual demand at this season of the year is encountered from the automotive industry, some attractively large orders, as much as 300 or 500 tons at a time, and occasionally 1000 tons, being placed. The hardware and building trades served by this industry likewise are active in specifying fair sized tonnages. The price still is unsatisfactory and while 2.60c occasionally is done on a single carload, 2.50c has been the more usual figure.

Hoops and Bands

Orders Increasing And Some Fourth Quarter Selling

HOOP PRICES, PAGE 578

Pittsburgh, Sept. 1.—An increasing number of orders is being placed for hoop and band sizes of hot strips. The price in every case is firm at 2.40c. Some contracts for last quarter likewise have been closed for fair sized tonnages for automotive and other consuming lines. Operations vary between 60 and 75 per cent.

Structural Shapes

Increase in Lettings Indicates Approach of End of Season—Some Sharp Quoting in Fabricated Prices

AN INCREASE in the number of structural contracts being let in the East on the basis of a price per pound indicates an expectation of an advance on fabricated material. In some sections of the East indications appear that large projects are commanding a lower figure than the regular market of 1.90c, Pittsburgh, which prevails in most sections. August buying of shapes in the West was largely increased over July. Some delay is being met there in building progress by threat of labor trouble. Eastern mills are competing sharply with Chicago makers in some territories. Cutting prices by fabricators to keep shops occupied is said to be causing some low figures, sometimes apparently much below necessity.

STRUCTURAL SHAPE PRICES, PAGE 578

New York, Sept. 1.—Increasing number of structural tonnages have come into the market on the pound-price basis, indicating that higher prices on fabricated material are expected by many in the trade. During the past week, orders have been less numerous, but have involved some substantial tonnages which made for a good total. Shape prices range 1.90c to 2.00c, Pittsburgh equivalent, with continued shading on especially desirable tonnages.

Boston, Sept. 1.—Demand for structural shapes continues unusually brisk for this time of year. Fabricators are well booked and heavy fall tonnages keep appearing. The general contract for the Statler Hotel, 8000 tons, has been let. Steel contracts during the week include 700 tons for a building for the Salada Tea Co. and 1000 tons for a hotel building in Boston. The price is held by leading sellers at 1.90c Pittsburgh but 1.85c Pittsburgh has been quoted.

Philadelphia, Sept. 1.—Special prices apparently are being done on structural shapes in connection with larger fabricating jobs here recently. The usual figure is 1.90c Pittsburgh, with eastern mills at 2.00c to 2.10c, mill. However, materially lower has been done in special instances.

Pittsburgh, Sept. 1.—Structural shapes still are in heavy demand although the price situation still leaves much to be desired. One concern reports that after cutting down costs all possible, eliminating most of its profit and practically all overhead, it lost, the next bid being $9 per ton lower. Structural shapes are quoted at 1.90c to 2.00c although the Carnegie Steel Co. and one or two independents are naming 2.00c as a minimum. Deliveries are growing somewhat tighter, some shops already naming four to six weeks.. The American Bridge Co. is operating its Ambridge, Pa. plant at 75 per cent of capacity.

Cleveland, Sept. 1.—Little new activity in structural steel is noticeable here. Plain material still persists at 1.90c to 2.00c Pittsburgh, with orders few for small tonnages. Selling is increasing slightly.

Chicago, Sept. 1.—Chicago fabricators in August improved their buying of plain material fully 50 per cent over July. Fabricator's stocks are extremely low considering the heavy awards for the season. Internal difficulties in the building trades are holding back some awards. Pittsburgh mills are competing sharply and about at even terms with Chicago mills in nearby territory. In Chicago plain material is quoted at 2.10c, Chicago.

St. Louis, Aug. 31.—The Carnegie Steel Co. has been awarded 1700 tons of sheet piling for the Stacey Park, St. Louis Municipal waterworks plant.

Awards Compared

	Tons
Awards this week	34,309
Awards last week	37,142
Awards two weeks ago	32,842
Awards this week in 1924	17,903
Average weekly awards, Aug.	30,786
Average weekly awards, 1925	32,913

CONTRACTS PLACED

11,000 tons for Broad street subway at Philadelphia, to McClintic Marshall Co.

1800 tons, Realty Associates building, Fifth avenue, New York City, through Post & McCord, to independent fabricator.

1700 tons, sheet piling for Stacey Park municipal waterworks plant, St. Louis, to Carnegie Steel Co.

1500 tons for Cascade Locks bridge Washington state, to Puget Sound Bridge & Dredge Co. and Union Bridge Co.

1500 tons, Bronx hospital, New York City, to the Taylor Fichter Steel Construction Co.; the Lustbader Construction Co. is general contractor.

1300 tons, loft, 531 Eighth avenue, New York City, to Levering & Garrigues.

1200 tons, addition to A. O. Smith Corp., Milwaukee, to Lakeside Bridge & Steel Co.

1200 tons, Army and Navy Y. M. C. A. building, San Francisco, to Pacific Rolling Mill Co.

1115 tons, addition for A. O. Smith Corp., Milwaukee, to Lakeside Bridge & Steel Co.

1100 tons for Childs building, 421 Seventh avenue, New York, to Levering & Garrigues.

1000 tons, loft, West Thirty-fifth street, New York City, to A. E. Norton, Inc.

1000 tons, apartment, Eighty-fifth street and West End avenue, to Easton Structural Steel Co.

1000 tons, addition to the Shelbourne hotel, Atlantic City, awarded through the George A. Fuller Co., New York City, general contractor, to an independent fabricator.

900 tons, apartment, Fifth avenue and Tenth street, New York City, to the George A. Just Co.

600 tons viaduct for Columbia-Cowlitz Railroad, Washington to United States Steel Products Co.

600 tons for a theater at 156 West Forty-fourth street, New York, to George A. Just Co.

600 tons, for factory building for Mississippi Glass Co., St. Louis, to St. Louis Structural Steel Co.

520 tons, Lawrence Avenue dancing academy, Chicago, to Lakeside Bridge & Steel Co.

325 tons Chehalis River bridge, Aberdeen, Wash., to Wallace Equipment Co.

350 tons of shapes, for Boston Elevated to Bethlehem Steel Co.

330 tons, Harvard dormitory, Cambridge, Mass., New England Structural Co. low bidder.

320 tons, State auditorium arena, Providence, R. I., to New England Structural Co.

330 tons for apartment at Jenkintown to American Bridge Co.

300 tons for Roxborough high school, Cleveland, A. A. Lane Construction Co., general contractors, to Forest City Steel & Iron Co.

275 tons, Marcus L. Ward home, Maplewood, N. J., to the American Bridge Co.

275 tons, bridge for the Pennsylvania railroad, to the Fort Pitt Bridge Works.

240 tons for bridge at Williamsport, Pa., to Phoenix Bridge Co.

225 tons, addition to the Toledo Machine & Tool Co. building, Toledo, O., to the American Bridge Co.

210 tons, first of two buildings for the Pittsburgh Parking Garages, Inc., Sixth avenue, Pittsburgh, through Mellon-Stuart Co., Pittsburgh, general contractor, to W. N. Kratzer Co.

200 tons, Sixth street viaduct at Racine, Wis.; Albert Pergande, 369 Herman street, Milwaukee, low bidder.

175 tons, co-operative apartments, Newbury street, Boston, to Lehigh Structural Steel Co.

150 tons packing plant for Upland Citrus association, Upland, Calif., to Union Iron Works of Los Angeles.

135 tons for bridge for Pennsylvania Lines West to McClintic-Marshall Co.

146 tons, highway spans for Wabash railroad at Montpelier, O., to eBthlehem Steel Co.

138 tons, highway bridge in Crawford county, Wis., to Illinois Steel Bridge Co.

125 tons, bridge for the New York, New Haven & Hartford railroad, to the McClintic-Marshall Co.

125 tons, Phillips-Andover Academy, Andover, N. H., to the Hedden Iron Construction Co.

100 tons for garage at 965 Atlantic avenue, Brooklyn, to George A. Just Co.

100 tons for conduit underpinning for Borough of Queens, to George A. Just Co.

100 tons, for alterations at 154 East Forty-sixth street, to Geogre A. Just Co.

CONTRACTS PENDING

8000 tons, office at Lexington between Forty-third and Forty-fifth streets, New York, Sloan & Robertson, architects; preliminary figures asked.

8000 tons, Point bridge at Pittsburgh; formal inquiry expected soon.

8000 tons, Statler hotel, Boston, Dwight P. Robinson & Co. Inc., 61 Broadway, New York City, awarded general contract.

7000 tons, Riverton bridge near McKeesport,

Pa.; formaly inquiry expected in about a month.
3000 to 4000 tons Lefcourt court loft, Broadway and Thirty-ninth street, New York, pending.
5700 tons, subway section No. 6, New York City, bids close Sept. 8.
1700 tons, for loft 268 West Thirty-ninth street, New York; pending.
1500 tons for 17-story loft, 248 East Thirty-ninth street, New York, pending.
1500 tons, Taylor-Allderdice high school, Pittsburgh, bids close Sept. 10.
1500 tons, Junior high school, Albany, N. Y., pending.
1000 tons, Winthrop 16-story hotel, Triemont street, Boston, bids in.
1000 tons, Liberty bridge at Pittsburgh; Pa.; formal inquiry expected in about a
1000 tons, Baptist church, Miami, Fla., pending.
900 tons, boiler shops Huntington, W. Va., for Chesapeake & Ohio railroad, general contract to Henry Milo, Cincinnati; previously reported awarded to Joseph Nelson & Son, Chicago.
800 tons for apartment on West Ninety-third street, Robert T. Lyons, architect, pending.
800 tons, high school, Pawtucket, R. I., bids being taken.
800 tons for co-operative apartment at Great Neck, L. I., pending.
700 tons, coach shop for Florida East Coast railroad at St. Augustine, Fla.; Battey & Kipp, 123 West Madison street, Chicago, engineers.
700 tons for 15-story apartment at Seventieth street and Lexington avenue, New York.
600 tons for a 10-story loft, 80 Willoughby street, Brooklyn, T. J. Bird, architect.
250 tons for theater and office building at Mineola, L. I., George Keister, 40 Fifth avenue, New York, architect, pending.
385 tons hotel, Nineteenth and Franklin streets, Oakland, Calif. Bids opened Aug. 26.
500 tons, high school, New Bedford, Mass., bids being taken.
250 tons Nevada Exposition buliding, Reno, Nev. Bids received.
250 tons, Midland, Pa. school; bids closed Aug. 31.
500 tons, Thomas Dickson high school, Swissvale, Pa.; bids about to be asked.
400 tons for apartment at Sixty-seventh street and Lexington avenue, New York, Robert T. Lyons, architect, pending.
300 tons for incinerator at Elmhurst, L. I., pending.
300 tons, Boston & Albany depot addition, Springfield, Mass., bids asked.
200 tons, highway bridge, Philadelphia, pending.
500 tons John A. Roeblings' Sons Co. warehouse, San Francisco. Bids being received.
150 tons, Dormont, Pa. bank, Dormont, Pa.; bids being taken.
150 tons for a residence for Charles Mitchell, Fifth avenue, pending.
150 tons, addition to plant, National Radiator Co., New Castle, Pa.; bids being taken.
150 tons, St. Francis Xavier church, Pittsburgh; bids being taken.

Concrete Bars

Heavy Demand as Season Nears Close — Bookings Are Steady

LATE season buying of reinforcing bars promises to be heavier than at any time this year in Chicago territory where perhaps 20,000 tons is pending. In other centers a large volume is before sellers. This indicates desire to complete projects before frost. Prices continue steady at prevailing levels with no sign of change either in mill or store quotations.

REINFORCING BAR PRICES, PAGE 578

Chicago, Sept. 1.—Pending work in reinforcing bars continues to expand and the statement that fully 20,000 tons of bars is required by current inquiry is regarded by some warehouses as an underestimate. Awards in the next 30 days promise to be heavier than for any similar period this year. The Kalman Steel Co. has taken 1300 tons for section 11 of the South Water street project, Chicago. A tonnage will be required for an apartment hotel for which D. H. Burnham & Co. are drawing plans. The market on reinforcing bars is holding well at 2.60c, Chicago warehouse.

Boston, Sept. 1.—While concrete bar sales of the past week have shown a fair total, individual jobs have been small. Much large work is in sight for fall construction. Prices range from 1.90c Pittsburgh. The Boston warehouse price is quoted at 3.00c.

Buffalo, Aug. 31.—An inquiry for 400 tons of reinforcing bars for the new Fairmont Creamery Co. building here will probably be closed this week and a contract placed also for 150 to 200 tons wanted by road builders. Prices are steady, sellers quoting 2.265c on bars from mills and 2.75c on stock shipments, Buffalo basis.

Pittsburgh, Sept. 1.—The letting by the Mellon-Stuart Co., general contractor, of concrete bars to be used in the first of two buildings to be erected for the Pittsburgh Parking Garages, Inc., furnishes the feature of the market this week. It is the largest order placed in several weeks, involving between 400 and 450 tons, going to the Carlen Engineering Co. Concrete bars are quoted at 1.90c to 2.00c. Inquiries are not particularly numerous but an attractive tonnage, possibly running to 2000 tons, will be involved in improvements now under way by the Pennsylvania railroad here.

Cleveland, Sept. 1.—Demand for reinforcing bars is steady and prices unchanged, with jobbers' price still 2.50c Pittsburgh. Billet bars are 2.19c to 2.25c Cleveland, showing a slight slackness in demand. Rail steel persists at 1.80c to 1.90c mill, orders coming in fair total of small tonnages. An inquiry is current for 600 to 700 tons for Florida.

St. Louis, Aug. 31.—The Laclede Steel Co. has been awarded the contract for 2400 tons of reinforcing bars for the Stacey Park, St. Louis Municipal waterworks plant and also 70 tons for a hotel at Jefferson City.

Awards Compared

	Tons
Awards this week	6,900
Awards last week	8,475
Awards two weeks ago	6,000
Awards this week in 1924	4,538
Average weekly awards, Aug.	5,371
Average weekly awards, 1925	6,405

CONTRACTS PLACED

2400 tons for Stacey Park municipal waterworks, St. Louis, to Laclede Steel Co.
1300 tons, section 11 of South Water street double-decking project, Chicago, to Kalman Steel Co.
531 tons California Lutheran hospital, Ninth and Hope streets, Los Angeles to Ge.o L. Eastman Co.
450 tons, first of two buildings for the Pittsburgh Parking Garages, Inc., Sixth avenue, Pittsburgh, to the Carlen Engineering Co.
380 tons, hotel for Plotke & Grosby, 111 West Washington street, Chicago, to Inland Steel Co.
230 tons Builders Exchange, Seventh and Los Angeles streets, Los Angeles to Truscon Steel Co.
249 tons Medico-Dental building, Eighth and Francisco streets, Los Angeles to Geo. L. Eastman Co.
275 tons for Greeley terminal warehouse, Cleveland, to Patterson-Leitch Co.
200 tons, reservoir, city of Dayton, O., to Pollak Steel Co.
115 tons, Oklahoma avenue bridge for Chicago, North Shore & Milwaukee railroad at Milwaukee to Concrete Engineering Co.
100 tons, swimming pool for South Park board, Chicago, to Concrete Steel Co.
190 tons, Indiana road work to Concrete Steel Co.
150 tons for Los Angeles, Spec. P-549 to Truscon Steel Co.
100 tons, power plant, Piqua, O., for Columbus Railway Power & Light Co., Columbus, O., to Bourne-Fuller Co.
140 tons, apartment at Jeffery avenue and Sixty-seventh street, Chicago, to Olney J. Dean & Co. Thomas R. Bishop, 35 South Dearborn street, Chicago, architect.
100 tons, addition to high school, Morton Grove, Ill., to Concrete Engineering Co.

CONTRACTS PENDING

4000 tons for elevator for Reading railroad, new bids being taken. Previously reported awarded to Truscon Steel Co.
1000 tons to 2000 tons, estimated to be involved in improvements now under way by the Pennsylvania Railroad Co. at Pittsburgh.
1200 tons for senior high school at Philadelphia.
400 tons, for new warehouse for Fairmont Creamery Co., Buffalo, bids taken Aug. 27.
200 tons, Taylor-Allderdice high school; bids close Sept. 10.
200 tons, river loading terminal at Weirton, W. Va., for the Weirton Steel Co.; formal inquiry expected soon.
200 tons, warehouse for the H. J. Heinz Co., Pittsburgh; Albert Kahn, Detroit, architect; bids about to be asked.
100 tons, river wall for the American Steel & Wire Co., Braddock, Pa.; general contract awarded the Concrete Steel Bridge Co., Clarksburg, W. Va.
150 tons, St. Joseph's Nurses' Home, St. Paul; C. A. P. Turner Co., St. Paul, general contractor.
175 tons Flood Control works, Edenburg, Texas. Bids. Sept. 22.
100 tons for Roxborough school, Cleveland; bids opened this week.
Tonnage unstated, 7-story Glengyl hotel, Chicago. Plans by Ohrensteir & Hild, 222 East Ontario street, Chicago.
Tonnage unstated, 7-story top addition to Standard Oil Co. building, Chicago. Plans by Graham, Anderson, Probst & White, 80 East Jackson boulevard, Chicago.
Tonnage unstated, 4-story silk mill for Oscar Heineman Corp., 2701 Armitage avenue, Chicago. R. C. Wieboldt Co., 1534 West Van Buren street, Chicago, general contractor.
Tonnage unstated, 15-story apartment building at Seneca and Chestnut street, Chicago; D. H. Burnham & Co., 160 North LaSalle street, Chicago, architects.

Rails, Cars

More Locomotives Figured—Demand for Light and Standard Rails Shows More Activity

DEMAND for rails is the more active feature of the markets this week, though more locomotives are pending, builders now figuring on at least 250 to 300. The Texas & Pacific wants 20,600 tons. A coal company placed 3000 tons of light rails at Pittsburgh, and the B. & O. closed for 1500 tons of standard rails. Car inquiries are few.

RAILROAD TRACK MATERIAL PRICES, PAGE 578

New York, Sept. 1.—Carbuilders enter the new month with little new business in sight, and with operations at many plants at low ebb. August showed an improvement in bookings over the preceding two or three months, but was a light month, new inquiries coming out slowly.

The locomotive market shows some signs of revival. The Chesapeake & Ohio has inquired for 110 and the New York Central list which has been pending, finally may reach 150. Buyers are expected within two weeks. The Baldwin Locomotive Works has taken 15 locomotives for the South African Railways & Harbor and 10 from the Seabooard Air Line. The Chesapeake & Ohio has purchased 25 locomotive boilers and is inquiring for 125 steel caboose cars, 10 all steel combination passenger and baggage cars, 3 all steel mail cars, 2 ditchers, 4 dump cars and 2 locomotive cranes.

Pittsburgh, Sept. 1.—More business is coming out in light rails and orders are becoming larger. One of the largest taken in several months involves 3000 tons, coming to a maker here from a coal company in the anthracite field. Other orders from bituminous mine operators involve 50 to 300 tons each. The price is firm at 1.70c, notwithstanding sharp competition among the West Virgina rerollers. The Baltimore & Ohio railroad has placed an order for 1500 tons of standard rails with the Carnegie Steel Co. Occasional standard spike orders for a carload or two at a time are noted from supply companies.

Chicago, Sept. 1.—Finished steel producers continue to look for good railroad placements of rails, track fastenings and cars in September, largely on the ground buying earlier this year has been subnormal and the carriers no longer hope for lower. prices. In some quarters, however, doubt is being expressed whether the railroads, able to load over 1,000,000 carloads of freight weekly and still have a surplus of serviceable cars, will add to their car investment this year. Both the New York Central and Illinois Central inquiries for 1000 cars remain pending, with steelmakers seeing an expansion of both inquiries to 10,000 cars if prices are right. This has been an active week in rolled steel wheels.

St. Louis, Aug. 31.—The Texas & Pacific railway is in the market for 6600 tons of 110-pound rails and 14,000 tons of 90-pound rails for December to May delivery.

Cleveland, Sept. 1.—An inquiry for 3500 tons of rails for the Akron, Canton & Youngstown railroad is current. The Chesapeake & Ohio has entered the market for 50 locomotives which, with the 75 for the New York Central still unplaced, makes a better total for pending business before makers in this territory.

ORDERS PLACED

Lehigh & New England, repairs to 300 hopper coal cars to the American Car & Foundry Co.
Mid-Continent Petroleum Corp., 13 tank cars to the American Car & Foundry Co.
King Chemical Co., 1 tank car, to the General American Tank Car Corp.
Florida East Coast, rebuilding of 20 Pullman sleeping cars as passenger coaches, to the Pullman Car & Mfg. Co.
50 mine cars for Pine Hill Coal Co. to Pressed Steel Car Co.
50 sugar cane cars for E. Atkins & Co. to Magor Car Co.
600 hopper car repairs for Lehigh & New England to American Car Co.

ORDERS PENDING

Sierra Railway of California, 60 hopper cars, bids asked.
Chinese government railways,15 freight cars, bids asked.
Union Pacific, two coaches pending.
Chesapeake & Ohio inquiring 125 steel caboose cars, 13 coach equipment, and miscellaneous.
Tidel Refining Co., 75 tank cars.
Georgia, Florida & Alabama 250 box cars; bids close Sept. 4.
Erie 27 express underframes.
Standard Oil Co. New Jersey drops inquiry 3 gondolas, 2 flats.
Buffalo & Susquehanna, 50 to 200 box car underframes.
Chicago & Northwestern inquiring 25 caboose underframes.
Panama Canal, 10 or more dump cars.
Baldwin Locomotive, 9 flat cars.
Lackawanna, 15 coaches; bids close Sept. 15.

Steel Imports Small

Philadelphia, Sept. 1.—Imports at this port for the week ending Aug. 29 were as follows: 7310 tons of iron ore from Sweden; 1007 tons of pig iron from Calcutta; 618 tons of steel blooms from France; 292 tons of structural steel from Luxemburg; 20 tons of steel bars from Luxemburg; 16 tons of manganese ore from Germany; two tons of reed wire, not tinned, from England; and 23 tons of structural steel from Belgium.

Wire

More Strength Felt but Not Enough to Increase Price or Production

CONSUMERS of wire and its products are buying sufficiently to maintain present operating rates and prices but not sufficiently to increase either. Some makers find the past week the best in a month. Spring terms on fencing have failed to bring much response thus far. Some New England mills find deliveries slower. Prices are stronger at the old levels.

WIRE PRICES, PAGE 578

Pittsburgh, Sept. 1.—Mixed carload orders for wire products are fairly steady although not numerous. The tonnage is not sufficient to raise the operating rate, and mills still average between 50 and 60 per cent of capacity. Little response has been experienced following announcement of spring terms on fencing. No real selling activity in fence is expected before the first of the year. Base prices are unchanged and firm, 2.50c on plain wire and 2.65c on wire nails being quoted.

Boston, Sept. 1.—Demand for wire is active. Delivery on some sizes from New England mills has slowed down. The price for plain wire holds at 2.65c Worcester. Nail sales are reported better.

Chicago, Sept. 1.—Improvement in demand for wire and wire products has not been sufficient to effect advances in price but present levels have been greatly strengthened. Last week's business in wire and nails for two makers was the best in a month. Wire nails are quoted at 2.70c, Chicago, plain wire at 2.55c and coated nails at 1.90c.

Latrobe Adds Capacity

Directors of the Latrobe Electric Steel Co., Latrobe, Pa., have taken steps to proceed with improvements and extensions. One building will be of steel construction, 60 x 400 feet. Three new 10-inch hot mills also will be erected, with three heating furnaces and two electric annealing furnaces. The second building will be used as a storeroom and will be 48 x 80 feet.

Nonferrous Metals

Easiness Develops When Buying Drops Off and Foreign Market Dips—Copper, Lead, Tin and Zinc Affected—Buyers Covered

Prices of the Week

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Spot Tin, N. Y. Straits	New York Lead	Lead St. Louis East	St. Louis Zinc	Aluminum 98-99%	Antimony Spot	Nickel Ingot
	Cents per pound									
Aug. 26	14.75	15.00	14.20	57.50	10.00	9.85	7.65	27.00	17.00	34.00
Aug. 27	14.75	15.00	14.20	57.25	10.00	9.75	7.62½	27.00	17.00	34.00
Aug. 28	14.75	15.00	14.20	57.25	9.97½	9.72½	7.60	27.00	16.87½	34.00
Aug. 31	14.75	15.00	14.10	56.75	10.00	9.72½	7.60	27.00	17.00	34.00
Sept. 1	14.62½	14.87½	14.10	56.50	9.80	9.60	7.57½	27.00	16.75	34.00

NEW YORK, Sept. 1.—Buying of metals is quiet and prices are easy—or at least not so strong as they were a short time ago. To say whether easiness in prices followed a drop in buying or buying disappeared when prices eased, is much like the question of whether the hen or the egg was first. From the point of view of the domestic market these two tendencies have in turn influenced each other, but when it is borne in mind that the metals are international, it is seen that a breathing spell in buying caused easiness abroad that carried prices here off a little and that in turn made buyers here still more of a retiring disposition.

Metal Products—Brass and copper rolled and drawn materials have been unchanged in price since the early part of August, with buying still fairly active, especially in copper wire, and shipments of practically all mill products going ahead at heavier rates than early in the summer. Lead and zinc sheets were marked up again a few days ago.

Copper—Copper is in a strange market, with prices sagging to 14.62½c delivered just at a time when it appeared that the market was about to touch 15c. Moreover, it appears that fundamentally the market is unchanged from the situation of two weeks ago when prices were rising, as stocks still are being cut on account of great shipments, and the outlook for fall business is bright.

Zinc—Buying of this metal has been very small lately and the market has eased slightly to 7.60c E. St. Louis for prompt September. Buying for September has not been large and so it is thought that activity will pick up soon again, especially as brass mills are busy and galvanizers are doing better business than early in the summer. Smelters have not been pushing the metal in dull seasons, as the ore market has been so strong as to limit profits drastically. A factor in the ore market is export business, while on the export of slab zinc little has been done lately.

Tin—The white metal has fallen two cents in the past few weeks, with buying slack and the world visible supply larger. However, spot continues to command a premium, as nearly all of the large arrivals of the metal are sold into consumption before they are landed. At less than 57.00c the metal is cheaper than at any other time steady, not easing off with copper, since early in the summer.

Lead—The price of lead has been tin and zinc in the world markets. The open market is less bullish on spot and prompt shipment, but the bulk of shipment is going at 9.50c New York and St. Louis with no sign of less being done. The situation still is so tight that some metal commands around ¼ cent more at St. Louis and ½ cent more in New York.

Aluminum—The light metal is active and shipments are heavy. Sales, by importers as well as the producer, are at 27.00c and 28.00c for the principal grades. Remelted and scrap materials are strong.

Mill Products

Base prices cents per pound, f.o.b. mill

SHEETS	
High brass	19.12½
Copper, hot rolled	22.75
Zinc, ga. 9 to 17	10.50
Lead full sheets (cut ¼c more)	13.00 to 13.50
Aluminum, bright flat, up to 10 gage	37.50
SEAMLESS TUBES	
High brass	23.75
Copper	24.75
RODS	
High brass (round ⅝ to 2½-inch)	16.62½
Naval brass	19.62½
WIRE	
Copper	16.50 to 16.75
High brass	19.62½

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	9.25
Chicago	10.25
Cleveland	9.50 to 9.75
HEAVY YELLOW BRASS	
New York	7.50
Chicago	8.50
Cleveland	7.50 to 7.75
ZINC	
New York	4.50
Cleveland	4.50 to 4.75
HEAVY COPPER AND WIRE	
New York	12.00
Chicago	11.75 to 12.00
Cleveland	11.50 to 11.75
RED BRASS TURNINGS	
New York	8.50
Chicago	9.25 to 9.50
Cleveland	9.00 to 9.25
YELLOW BRASS TUBING	
Cleveland	7.75 to 8.00
YELLOW BRASS BORINGS	
Chicago	8.50
Cleveland	7.75
LIGHT COPPER	
New York	9.75
Chicago	11.00 to 11.25
Cleveland	10.00 to 10.25
LIGHT BRASS	
Chicago	7.75 to 8.00
Cleveland	6.25 to 6.50
ALUMINUM	
Borings, Cleveland	13.00 to 13.50
Old sheet and cast, Cleveland	18.00 to 18.50
Clippings, Cleveland	21.00 to 22.00

Secondary Metals

Remelt aluminum No. 12	23.50 to 24.00
Brass ingot 85-5-5-5	12.25 to 12.75

Coke By-Products

Sulphate Prices Higher—Distillate Market Steady

New York, Sept. 1.—Sulphate of ammonia prices are slightly higher, reflecting the sold up position of producers. On scattered tank lots for nearby delivery, $2.75 to $2.80 delivered is the prevailing range, while on business for foreign account, $2.75 port, in double bags is quoted. Export buying this year has been unusually light due to European competition, particularly from England and Germany.

Steadiness characterizes the light oil distillates. On spot shipments of pure benzol the usual differential of three or four cents per gallon over the going market is being asked in some quarters as supplies generally are scarce. On material for delivery at the shipper's convenience, 25 cents, works, in carload lots and 30 cents in drums, is being quoted for pure benzol, and 24 cents in tanks and 29 cents in drums, on 90 per cent benzol. Prices of 25 cents, works, in tanks and 30 cents in drums are quoted on solvent naphtha and 26 cents in tanks and 31 cents in drums on commercial xylol and toluol. Phenol is nominally unchanged at 22 to 23 cents, works, for material in carload lots.

Naphthalene is featureless, with flakes at 5½ to 6½ cents, works, and balls at 6½ to 7½ cents. Trading at the moment is slack.

Coke Oven By-Products

Per Gallon at Producers' Plants in Tank Lots

	Spot	Contract
Pure benzol	$0.25 to	0.28
Toluol	0.26	
Solvent naphtha	0.25	
Commercial xylol	0.25	

Per Pound at Producers' Plants

Phenol	0.23 to 0.24	0.22 to 0.23
Naphthalene flakes	0.05½ to 0.06½	0.05½ to 0.06½
Naphthalene balls	0.06½ to 0.07½	0.06½ to 0.07½

Per 100 Pounds Delivered

Sulphate of ammonia	$2.77½

Coast Demand Is Good

Large Total of Projects Under Consideration—
Prices Show Some Weakness

BY AIR MAIL

SAN FRANCISCO, Aug. 29.—Few structural shape, plate and concrete bar awards were let during the past week and trading in other lines of steel products was confined to unimportant lots. With the exception of plate prices, which have softened during the week, firmness is noted all along the line.

By far the most important project that has ever come up on the Coast is the Oakland pipe line job, bids on which will be opened Sept. 4, involving approximately 80,000 tons of plates. A large number of contractors and sub-contractors will submit figures. The state supreme court has validated the bond election and it is now assured that the project will go through without further delay.

Coast Pig Iron Prices

No. 2 Columbia, San Francisco	27.00 to 28.00
No. 2 Columbia, Los Angeles	27.00 to 28.00
No. 2 Columbia, Portland	27.50 to 28.50
No. 2 Columbia, Seattle	27.50 to 28.50
Columbia basic delivered	27.00 to 28.00
*Dutch (2.75 to 3.25)	24.25
*Indian iron	25.00
*Belgian (2.00 to 2.50)	25.00
*English iron (2.00 to 2.50)	27.00
*English iron (2.50 to 3.00)	27.50 to 28.00
*English (3.00 to 4.00)	28.00 to 28.50

*C.I.F. duty paid, coast ports.

Pig Iron And Coke

During the past week prices on foreign foundry iron have softened. Indian iron and Belgian iron, 2.00 to 2.50 in silicon, is down $1 a ton, from $26 to $25 c.i.f. duty paid while Dutch material, 2.75 to 3.25 silicon is off 75 cents and is now quoted at $24.25 c.i.f. duty paid. English foundry, 2.00 to 2.50 is down 50 cents and now holds at $27 flat. No sales of importance were reported. The Southern Pacific Co. has not taken any action yet on their inquiry for 500 tons of 2.75 to 3.25 silicon foundry iron.

English bee-hive coke is being quoted at $15 to $16 a ton while the by-product coke ranges from $12 to $14 a ton. German by-product coke is quoted at $11.50 to $12 a ton. During the week one large importer has received a shipment of 4000 tons of English coke to apply against contracts entered several months ago for delivery both in the San Francisco and Los Angeles districts.

Bars, Plates And Shapes

Small lots of reinforcing bar material continue to predominate in this section, one large jobber reporting the receipt of sixteen orders in one day for tonnages of 20 to 60 tons. Awards of larger lots totaled over 1100 tons for the week. A weakness is noted in prices, 3.80c l.c.l. being nominal at this time. Nothing of importance has developed in the market for merchant material, orders still being confined to scattered small lots. Bids will be opened Sept. 9 for a bridge in Idaho calling for 112 tons and Sept. 22 for 175 tons for the flood control works at Edenburg, Texas.

Prices on plates have softened and 2.30c c.i.f has become easier to obtain even on smaller lots, although some business is still being booked at 2.35c. No awards of importance were noted during the week. The new projects have come up for figures and involve 2500 tons for a gas holder for the Western States Gas & Electric Co. at Stockton, Calif. and 1500 tons for a pen-stock for the South San Joaquin irrigation district at Manteca, Calif., bids on which will be opened Oct. 15.

Other Finished Material

Only one cast iron pipe award was reported for the week, going to McWane Cast Iron Pipe Co. and involved 128 tons for Modesto, Calif. Pending business is in excess of 8500 tons. The largest inquiry in the market calls for 3885 tons for Portland. Glendale is asking for prices on 2957 tons, bids on which have just been opened. While several large line pipe inquiries are still pending, nothing of importance has been closed this week. Merchant pipe is in fair demand and stocks are lower than usual.

Sheet sales continue spotty and have involved relatively small tonnages. While 4.30c base Pittsburgh is now being quoted by most mills on galvanized material, 4.20c more nearly represents the run of the market. Little black material is moving. Blue annealed is readily obtained at 2.25c base Pittsburgh.

Melting steel has advanced slightly and now ranges from $11.50 to $12 a ton delivered mill. Movement of cast scrap is confined to small lots and is being quoted at from $19.50 to $20.50 a ton.

Northwest Buys Well

SEATTLE, Wash., Aug. 27.—Purchases of iron and steel are confined to small lots and producers are making every effort to hold prices steady as it is certain the buying public will not make forward commitments on a weak market. Construction continues on a large scale.

Bars, Plates and Shapes

The local mill reports fair business on its books. It is working two furnaces and larger specifications are coming in. Wholesalers in this district report steel bars steady at 3.25c, competition of foreign material being less pronounced than at Portland where imported bars are reported selling at 2.50c to 2.85c. Demand for reinforcing material is fairly steady here.

Plates and shapes are holding firmer at 2.35c and 2.40c respectively, established several weeks ago. Opinion of the trade is that the bottom has been reached and any change is likely to be upward.

Demand for plates is not heavy but several large contracts involving shapes have been awarded or are pending. The Cascade Locks bridge has been awarded to the Puget Sound Bridge & Dredge Co., Seattle, and the Union Bridge Co. This job involves about 1500 tons of material.

The West bridge, Aberdeen, recently awarded to the Puget Sound Bridge & Dredging Co., involves 300 tons of steel. This structure was designed by M. M. Caldwell, engineer, Seattle, who also has designed the Little Hoquiam bridge, Hoquiam, bids for which will be opened Sept. 9. Material involved totals 46 tons. The state highway department expects to call bids in October for the Vantage ferry which will be 2200 feet in length and estimated to cost $500,000 or more.

Finished Materials

Jobbing prices are unchanged here. The trade is buying out of stock and business as a whole is reasonably satisfactory although purchases are confined to small lots. Construction materials are in good demand and there is also a fair turnover of sheets.

Seattle city officials have decided to postpone for the present the proposed reconstruction with steel pipe of a portion of the municipal water system. The project in view would require 6600 tons of steel. The Hind street water main project is being readvertised, bids for cast iron having been rejected. The lowest figure was $185,356. The new specifications call only for cast iron as the committee decided not to consider steel mains.

Vancouver, B. C., on Sept. 22 will open bids for materials required in the Seymour creek water system. One contract calls for 5200 feet of flexible joint cast iron pipe and 800 feet of plain bell and spigot pipe. The second contract involves gates and valves ranging from 18 to 36 inches. The two contracts are estimated to amount to $150,000.

The main buying interest is paying $10 to $10.50 gross for steel scrap, conditions being such that material can be selected.

Competition Ruinous to Britain

Steelworks Close While Material Is Imported—20,000 Tons of Sheet Bars Sold in South Wales $6 Below Domestic Price—Continental Pig Iron Shipped to the Clyde—Meeting Called To Form Rail Syndicate

European Headquarters,
IRON TRADE REVIEW,
2-3 Caxton House, Westminster, S. W.1

LONDON, Sept. 1.—(*By Cable*)—The British steel industry still suffers from competition. While the Port Talbot steelworks of Baldwins Ltd. has been closed, adding 1000 workmen to the list of unemployed, steel continues to be exported from the Continent in larger tonnages. The latest sale is 20,000 tons of foreign-made sheet bars for making tin plate, for shipment to South Wales at a price of £5 5s ($25.45), against a British minimum price of £6 10s ($31.50). Imported steel joists are underselling the British product by 5 shillings ($1.20). Three hundred tons of Belgian tube skelp has been sold at Staffordshire at £7 14s 6d ($37.46), delivered.

British pig iron prices are easier, due to lower coke prices. Sentiment in the market is improving. Three furnaces at Barrow have restarted and two others are preparing. Cleveland pig iron, however, has been undersold 7 shillings ($1.69) by iron made on the Continent for delivery to the Clyde.

India is buying galvanized sheets from British mills, and the tin plate market is improving.

A meeting having for its purpose the formation of an international rail selling syndicate has been called for Sept. 23 in Paris. The German Steel Ingot association has raised its rebates for September to compensate for a sharp fall in market values. All rebates have been increased to 20 marks.

British Find Belgian Competition Cuts Deeply

Office of IRON TRADE REVIEW,
Prince's Chambers, Corporation St.

BIRMINGHAM, Eng., Aug. 21.—Rather more optimism is in the air, for which, however, it is difficult to find an adequate basis. Possibly, it has been stimulated by the fall in the bank rate, which gave much relief to industrial circles, and it is considered quite likely that another half per cent will be taken off shortly.

More trade is being done in iron and steel but, unfortunately, the increase chiefly benefits merchants and foreign manufacturers. A Birmingham merchant has this week booked an order for Belgian joists of 1000 tons for delivery in Manchester at £5 3s 6d ($25.15) f.o.b. Antwerp. They are to British specification 28-32 tons tensile. The same merchant has booked 1000 tons of billets for delivery in the Black Country at £5 10s 6d ($26.85). It is said that £5 10s ($26.73) had been accepted somewhat earlier, but the business with Belgium lately has been chiefly at £5 15s ($27.94). A tonnage of German cold-rolled steel has within a short period been sold through a Birmingham merchant for delivery to the end of January, covering about ten sizes and ranging from between £18 10s ($89.91) and £22 10s ($109.35) giving for the thicker gages an advantage of £2 ($9.42) per ton.

Sterling $4.86

British steel makers are making an effort to meet this formidable foreign competition. July imports indicate its seriousness, the total of joists imported during the seven months being 67,415 tons as against

(*Concluded on Page* 601)

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, August 31	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Despatch—By Cable								
PIG IRON		£ s d		Francs		Francs		£ s d
Foundry No. 3, Silicon 2.50-3.00	$16.65	3 8 6*	$15.28	325	$14.43	320	$20.17	4 3 0
Basic	17.62	3 12 6	15.98	340	14.66	325	21.63	4 9 0
Basic-bessemer	18.83	3 17 6†	14.81	315	13.98	310	20.17	4 3 0
Hematite, Phosphorus 0.02-0.05	18.35	3 15 6	19.74	420	.....	...	21.87	4 10 0
SEMIFINISHED STEEL								
Billets	$27.95	5 15 0	$22.80	485	$26.10	4?0	$24.79	5 2 0
Wire rods	46.17	9 10 0	27.50	585	27.51	610	29.89	6 3 0
FINISHED STEEL								
Standard rails	$38.88	8 0 0	$24.68	525	$23.68	525	$31.15	6 10 0
Merchant bars	1.68c	7 15 0	1.19c	560	1.18c	575	1.21c	5 10 0
Structural shapes	1.57c	7 5 0	1.16c	545	1.14c	555	1.20c	5 9 0
Plates, ship, bridge and tank	1.68c	7 15 0	1.41c	660	1.38c	675	1.43c	6 10 0
Sheets, black, 24 gage	2.33c	10 15 0	2.56c	1,200	2.31c	1,125	2.81c	12 15 0
Sheets, galvanized, 24 gage, corrugated	3.52c	16 5 0	3.95c	1,855	4.61c	2,250	3.97c	18 0 0
Bands and strips	2.33c	10 15 0	1.47c	6?0	1.54c	750	1.68c	7 12 0
Plain wire, base	2.39c	11 0 0	1.92c	900	1.64c	800	1.82c	8 5 0
Galvanized wire, base	3.04c	14 0 0	2.45c	1,150	2.15c	1,050	2.04c	9 5 0
Wire nails, base	3.15c	14 10 0	2.02c	950	1.74c	850	2.09c	9 10 0
Tin plate, base box 108 pounds	$ 4.68	0 19 3	.....	...	.....	...	$ 6.56	1 7 0
Domestic Prices at Works or Furnace—Last Reported								Renten Marks
Foundry No. 3 Pig Iron, Silicon 2.50—3.00	$17.01	3 10 0	$16.22	345(2)	$14.43	320	$20.01	87
Basic pig iron	17.62	3 12 6	15.51	330(1)	13.98	310	20.93	91
Furnace coke	3.04	0 12 6	6.67	142	5.64	125	5.52	24
Billets	27.95	5 15 0	20.68	440	22.55	500	27.60	120
Standard rails	1.74c	8 0 0	1.13c	530	1.08c	525	1.48c	142
Merchant bars	1.71c	7 17 6	1.16c	545	1.20c	585	1.41c	135
Shapes	1.68c	7 15 0	1.07c	500	1.14c	555	1.38c	132
Plates, ship, bridge and tank	1.74c	8 0 0	1.64c	770	1.40c	685	1.56c	150
Sheets, black, 24 gage	2.33c	10 15 0	2.58c	1,210	2.36c	1,150	2.60c	240
Sheets, galvanized 24 gage, corrugated	3.50c	16 2 6	3.99c	1,875	2.67c	2,300	3.86c	370
Plain wire	2.39c	11 0 0	1.94c	910	1.64c	800	1.98c	190
Bands and Strips	2.33c	10 15 0	1.49c	700	1.54c	750	1.62c	155

*Middlesbrough; †Scotch foundry iron; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 12s 6d ($3.04) f. o. b. Ferromanganese £15 10s 0d ($75.33) f. o. b. German ferromanganese £15 0s 0d ($72.90) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

The Market Section

Machinery

August Sales Are Considerably Better Than in July—Buying Well Distributed—Crane Orders Slow But Better

ALL machine tool centers report a favorable volume of business in August as compared with July. This was somewhat contrary to forecasts made during the early part of the month. Whereas in earlier months of this year, buying of equipment by railroads provided the feature of the market, the situation in August was almost reversed. Buying has been done by diversified industrial interests, particularly the automobile companies which are running at a high rate and preparing for increased operations. It is expected that a notable improvement in sales will be made in September with the drawing to a close of the vacation season. Used tools are not moving as well as new. Crane buying is showing some improvement, particularly in eastern territory.

Pittsburgh, Sept. 1.—August compared favorably with July from the standpoint of money expended for machine shop equipment, although perhaps not so many individual tools were purchased. This means that a fair number of individual tool orders involved $6000 to $10,000 apiece, as against numerous smaller machines in July. Several dealers report that last week no groups at all were moved, all sales being of single items. Nickel Plate railroad at Cleveland is negotiating for standard shop equipment involving six or seven machines. This list, together with two or three from trade schools here and in Uniontown, Pa., are the only new lists pending. The crane market is sluggish, one or two orders being noted, one on an exchange basis with the crane seller taking the products of the buyer in payment.

New York, Sept. 1.—The closing week of last month showed a falling off in machine tool business. A fairly good amount of inquiry prevailed but orders were scattered. Sellers look for little activity now until after Labor day. The New York Central railroad has added a grinder and a radial drill to its pending list of several machines. Railroad business is not the feature of the market as was the case earlier in the summer, when several sizable lists were pending. Of the eastern roads, the Lehigh Valley is perhaps the only one with anything like a fairly sizable list, and this has been pending for several weeks. Crane buying includes few notable lists, but in the aggregate is fairly good. Considerable business is pending.

Boston, Sept. 1.—Machine tool activity continues above normal, dealers nearly all reporting improved inquiry and sales. Tool manufacturers are increasing production at a favorable rate. A manufacturer of chucks is busier than at any time in several years, and a small tool manufacturer is working a night shift. A textile machine manufacturer has been in the market for some equipment during the last few days. Used tools are offered more freely but prices are soft.

Cleveland, Sept. 1.—Machine tool and equipment business done in August was in satisfactory volume, and in most cases exceeded expectations expressed early in the month. While the Cleveland territory proper has been particularly quiet, outlying territory, including the Detroit area, was unusually active. A local manufacturer of turret lathes has just received an order for about 40 machines from the Hudson Motor Car Co., Detroit. The same interest also sold two machines for export to Belgium. Liberty Planer Co. has received orders for three planers for the Hudson Motor Car Co. and one for the Ford Motor Co. Used tools are displaying a little more life but are less active than new.

Chicago, Sept. 1.—Business in machine tools continues light and dealers believe it will be the middle of September before the upturn comes. With few exceptions, the larger sellers look for good business this fall. Wabash railroad has been placing tools at St. Louis for its new shops at Decatur, Ill. A. Finkl & Sons Co., Chicago, is planning a machine shop addition.

San Francisco, Aug. 22.—Sales continue to be confined to single installations. Dealers report a better volume of inquiries, but buyers are in no hurry to close. Several large eastern manufacturers are featuring rebuilt tools and are selling them under guarantee. Some dealers think if all manufacturers were to pursue this policy the problem of meeting the competition of used equipment would be solved to a great extent. City of Los Angeles is asking for prices on a pipe threading and cutting machine, 1 to 6 inches capacity, with accessories. Although little activity is reported in demand for cranes at present, several large orders have been placed during the past month.

CRANE ORDERS PLACED

Ten 10-ton lumber handling cranes for Weyergauser Lumber Co., Tacoma, Wash., to Harnischfeger Corp.

Fourteen 5-ton and two 10-ton traveling cranes, five 5-ton monorail cranes and four 20-ton transfer cars for Long Bell Lumber Co., Longview, Wash., to Milwaukee Electric Crane & Hoist Co.

Six 5-ton jib cranes for hammer shop of American Locomotive Co., Dunkirk, N. Y., to Whiting Corp.

Four 3-ton jib cranes for Standard Oil Co., New York, to Maris Bros.

Two used cranes, one of 5-ton and other of 10-ton capacity, for Vulcan Mould & Foundry Co., Latrobe, Pa., bought in Pittsburgh district recently.

Two 5-ton cranes for Townsend Co., New Brighton, Pa., to Morgan Engineering Works, Alliance, O.

Two 5-ton traveling cranes for Byron Jackson Pump Co., one for Los Angeles and other for Berkeley, Calif., plant, to Cyclops Iron Works.

Several cranes for Youngstown Foundry & Machine Co., Youngstown, O., understood to have been awarded to Shaw Electric Crane Works.

Among single orders were: 20-ton geared hoist for Porto Rico International Corp. for export and small electric hoist for Insulator Mfg. Co., Brooklyn, N. Y., both to Roper Crane & Hoist Co.; 12-ton special hoist for Electric Bond & Share Co., New York, to Chisholm-Moore Mfg. Co.; 10-ton special bucket handling gantry crane for Public Service Production Co. for operation in connection with New Jersey approach to Hudson river vehicular tunnel, 10-ton electric crane for stoneyard of James B. Lenahan, New York, and 10-ton electric overhead crane for Adirondacks Steel Foundries Co., Watervliet, N. Y., all going to Shaw Electric Crane Works; 25-ton used locomotive crane for Ackerman & Russell, Troy, N. Y., contractors, to Philip T. King, New York; 25-ton gantry crane for Johnstown, Pa., shops of Pennsylvania railroad, to Whiting Corp.; 5-ton single I-beam handpower crane for stoneyard in East New York, 400-foot monorail system with 1½-ton hoist for chemical works in Newark, N. J., and two 5000-pound handpower cranes and 150-foot runway system for specialty stamping company, Brooklyn, all going to New Jersey Foundry & Machine Co.; 10-ton traveling crane for Rodinson Mfg. Co., South San Francisco, Calif., to Cyclops Iron Works.

CRANE ORDERS PENDING

Three or four cranes for Youngstown Sheet & Tube Co., Youngstown, O.; order about to be placed.

Two 25-ton electric overhead cranes for Wabash railroad; expected to be closed shortly through Dwight P. Robinson & Co., Inc.

Additional cranes for Carnegie Steel Co., Pittsburgh district; to be placed soon.

Single orders pending include: 5-ton handpower crane for City of New York, for new Cloze pumping station, Richmond, S. I., bids closed Aug. 29; 5-ton electric overhead crane with 3-ton handpower crane alternate for Holland Iron Works, East New York, N. Y., bids asked; 25-ton gantry crane for Pennsylvania railroad, Harrison, N. J., pending; cranes for Weirton Steel Co., Weirton, W. Va., formal inquiry expected at early date; cranes for Latrobe Electric Steel Co., Latrobe, Pa., early award expected; cranes for Ajax Iron Works, Corry, Pa., order about to be placed; electric traveling crane for Delaware, Lackawanna & Western railroad, Buffalo, bids being taken; 4-ton lumber handling crane for Owne-Oregon Lumber Co., Medford, Oreg., bids being received.

August Iron Production Gains

Rate of Output Makes First Increase After Four-Month Decline—Total for Month Is 2,703,616 Gross Tons—Stacks Gain Four, Bringing Active Number To 192

PRODUCTION of coke pig iron in August registered the first gain following the four-month steady decline which started in April. Active blast furnaces showed their first increase in the same period and indicate that readjustment has been completed and iron making once more is entering into an upward swing. Active blast furnaces on Aug. 31 totaled 192, or an increase of four furnaces over the 188 operating on July 31.

Pig iron produced in August amounted to 2,703,616 gross tons, which compared with the 2,665,262 tons of July, was a gain of 38,354 tons, or 1.4 per cent. On an average daily basis, this represented 87,213 tons per day in August, against 85,976 tons in July, an increase of 1237 tons per day. Since August and July were months of 31 days each, the percentage increase in daily output was the same as that in total tonnage. In August iron was made at the annual rate of 31,800,000 tons per year, compared with the indicated annual rate of 31,400,000 tons in July.

Merchant iron made in August totaled 585,161 gross tons or a loss of 24,580 tons from the 609,741 tons of the preceding month. On a daily basis this production represented 18,876 tons per day in August and 19,669 tons in July, the decrease amounting to 793 tons per day. Nonmerchant or steelworks iron produced in August amounted to 2,118,455 tons or a gain of 62,934 tons over the 2,055,521-ton production of July. Reduced to a daily basis the August nonmerchant output was at the rate of 68,337 tons per day, an increase of 2030 tons over the 66,307-ton rate of the previous month.

Active blast furnaces on Aug. 31 totaled 192, a gain of 4 over the 188 active on July 31. During August two merchant furnaces were blown in and four were blown out or banked, the net loss being two. Of the nonmerchant class, nine furnaces were blown in and three blown out.

In August the total number of blast furnaces in the country was reduced from 396 to 391. The following furnaces have been dismantled or abandoned: Rising Fawn, Georgia Steel Co., Rising Fawn, Ga.; Emma, American Steel & Wire Co., Cleveland; Columbus Nos. 1 and 2, Carnegie Steel Co., Columbus, O.; and Tonawanda B, Tonawanda Iron Corp., North Tonawanda, N. Y.

Furnaces blown out during August were: In Ohio: Belfont, Belfont Steel & Wire Co.; Mattie, A. M. Byers Co.; Ironton, Marting Iron & Steel Co.; Lorain No. 1, National Tube Co. In Pennsylvania: One Steelton and one Lackawanna, Bethlehem Steel Co. In Illinois: One South Chicago, Wisconsin Steel Co.

Stacks blown in during the month: In Ohio, Lorain No. 5, National Tube Co.; one Buckeye, American Rolling Mill Co. In Pennsylvania: Two Duquesne, Carnegie Steel Co.; one Eliza, Jones & Laughlin Steel Corp.; one Bethlehem, one Maryland and one Cambria, Bethlehem Steel Co. In West Virginia: Riverside No. 2, National Tube Co. In Alabama: Woodward No. 1, Woodward Iron Co. In Wisconsin: Thomas, Thomas Furnace Co.

Active Blast Furnaces

	In blast	Total	Per Cent
August	192	391	49.2
July	188	396	47.5
June	191	399	47.9
May	196	405	48.5

MONTHLY PRODUCTION

	1925	1924	1923
January	3,372,207	3,015,480	3,228,226
February	3,214,067	3,073,619	2,993,918
March	3,571,422	3,465,389	3,523,595
April	3,211,235	3,226,107	3,546,308
May	2,933,907	2,619,986	3,868,486
June	2,679,045	2,022,836	3,667,868
Total 1st half	18,981,883	17,423,417	20,828,401
July	2,665,262	1,783,457	3,684,677
August	2,703,616	1,882,986	3,448,886
September	.....	2,053,617	3,117,526
October	.....	2,461,727	3,142,642
November	.....	2,514,979	2,891,191
December	.....	2,956,389	2,912,527
Total 2nd half	.....	13,653,155	19,197,449
Grand total	24,350,761	31,076,572	40,025,850

AVERAGE DAILY PRODUCTION

	1925	1924	1923	1922	1921
Jan.	108,781	97,273	104,136	53,090	77,895
Feb.	114,788	105,987	106,925	58,220	69,906
Mar.	115,207	111,787	113,664	65,674	51,447
Apr.	107,041	107,537	118,210	69,005	39,691
May	94,642	84,515	124,790	74,495	39,202
June	89,301	67,427	122,262	78,748	35,466
July	85,976	57,531	118,860	77,517	27,892
Aug.	87,213	60,741	111,254	58,408	30,802
Sept.	.....	68,454	103,917	67,466	32,859
Oct.	.....	79,410	101,375	84,827	39,821
Nov.	.....	83,832	96,373	94,870	47,165
Dec.	.....	95,367	93,952	99,468	52,992
Ave.	100,208	84,908	108,659	73,563	45,223

DIVISIONS OF PRODUCTION

1924	Merchant	Non-merchant	Spiegel	Ferro-man-ganese	Other ferro
Jan.	707,710	2,307,770	7,948	19,735	.....
Feb.	679,700	2,393,919	9,870	22,262	.....
Mar.	712,321	2,753,068	13,794	22,350	.....
Apr.	708,151	2,517,956	4,240	23,580	163
May	648,656	1,971,330	9,336	21,663	763
June	551,408	1,471,428	9,410	20,563	779
July	468,780	1,314,677	15,328	11,927	765
Aug.	465,059	1,417,927	8,010	7,654	760
Sept.	518,017	1,535,600	5,033	7,255	593
Oct.	607,717	1,854,010	10,047	7,780	822
Nov.	605,438	1,909,541	8,835	13,429	870
Dec.	634,726	2,321,663	5,284	21,220	904
Total	7,307,683	23,768,889	107,135	199,418	6,419
1925					
Jan.	659,256	2,712,951	5,418	23,564	956
Feb.	661,415	2,552,652	4,910	19,796	848
March	736,284	2,835,138	5,449	24,422	877
April	689,162	2,522,073	5,341	21,448	799
May	605,347	2,328,560	5,294	22,717	298
June	563,782	2,115,263	4,972	19,834	.....
July	609,741	2,055,521	5,074	16,614	.....
Aug.	585,161	2,118,455	4,939	18,867	.....

AUGUST PIG IRON

	No. of Stacks	No. in blast last day of month August	July	Total tonnage made Merchant	Nonmerchant	—Totals— August	July
Pennsylvania	137	64	60	94,028	734,785	828,813	782,451
Ohio	74	43	45	141,943	580,753	722,696	715,355
Alabama	39	24	23	106,741	121,839	228,580	224,836
Virginia	17	2	2	11,198	.....	11,198	11,047
New York	26	11	12	57,853	88,464	146,317	148,458
New Jersey	4	0	0	.....	.....	.....	.....
Illinois	25	14	15	90,003	163,634	253,637	263,826
Colorado	4	1	1				
Indiana	17	13	13	28,756	312,909	341,665	356,225
Maryland	6	5	4				
Wisconsin	6	2	1				
Kentucky	7	1	1				
Tennessee	14	1	1	13,310	58,477	71,787	63,393
Utah	1	1	1				
West Virginia	5	4	3				
Michigan	4	4	4				
Minnesota	3	2	2	32,241	42,876	75,117	77,983
Missouri	1	0	0				
Texas	1	0	0				
Spiegel and ferro—all states	....	....	....	9,088	14,718	23,806	21,688
Total	391	192	188	585,161	2,118,455	2,703,616	2,665,262

Trumbull Steel Affairs in Air

Executive Committee Is Named With James A. Campbell at Its Head to Unravel the Tangled Financial Situation—Debenture Issue Reveals Liabilities—President Warner Resigns—Merger Plans Delayed

JONATHAN WARNER, head of the Trumbull Steel Co., Warren, O., since its incorporation in 1912, resigned as president and director of the company at a meeting of the board of directors at Cleveland Tuesday afternoon. The management of the company was placed in the hands of an executive committee of three, including President James A. Campbell of the Youngstown Steel & Tube Co.; President A. E. Adams of the First National bank, Youngstown; and Phillip Wick of Youngstown. Mr. Wick also was elected president of the company temporarily, succeeding Mr. Warner. Messrs. Campbell and Adams were named to the board of directors succeeding Mr. Warner and W. M. McFate, resigned. Mr. McFate will continue as vice president.

In a statement issued by directors following their meeting Tuesday afternoon it was declared that agreement had been reached to withdraw the $17,500,000 of debentures issued by the company because of "material errors" contained in the statement of condition submitted by the company to the National City Co., New York, which underwrote the issue. The directors declared that banking creditors of the company are taking a friendly and helpful attitude and are waiting a completion of certified audit of the company's books now being made.

Pending ascertainment of a complete and accurate statement of the financial condition of the company, which is necessary for intelligent action, directors stated that any move looking toward a merger or amalgamation would be postponed. Meanwhile the directors expressed their conviction that the company is fundamentally sound and able to meet its obligations. It is further stated that the company is enjoying excellent business at present.

These developments came as a climax to a series of extraordinary events beginning with the flotation of $17,500,000 of debentures by the Trumbull company, and leading up to the premature announcement of plans for a $110,000,000 steel company merger to include Trumbull, the Otis Steel Co., and the Midland Products Co., both of Cleveland.

Coincident with the adoption of the committee plan came the filing of a stockholders suit at Warren asking a mandatory court order compelling the Trumbull Steel Co. to submit its books to an audit. The suit was filed by John A. Elden, Cleveland attorney, on behalf of himself and certain other holders of Trumbull common stock. According to Mr. Elden, liabilities of the company which were shown as being only $8,000,000 as of Dec. 31, 1924, apparently had grown to $22,000,000 as of May 31, 1925.

Mr. Campbell was urged by large Mahoning interests identified with Trumbull to endeavor to untangle the financial situation and to protect the interests of preferred stockholders in the event of any amalgamation of Trumbull with other companies. Mr. Campbell had no official connection with Trumbull, but the Youngstown Sheet & Tube Co. has $500,000 invested in Trumbull preferred stock.

Discord rose in the Trumbull family of stockholders and officers with the appearance of the debenture issue of $17,500,000. The necessity for such a flotation revealed to most holders of the company's stock, the existence of liabilities hitherto unknown to them. These liabilities had not been previously exposed, it is said, because the company had discontinued the practice of having certified audits for a number of years.

Of the company's liabilities, $10,000,000 were incurred as a result of plant improvements and additions authorized by President Jonathan Warner. These expenditures were personally financed by President Warner out of his own private fortune. Regarding this unusual procedure Mr. Warner in a recent statement declared he had made the expenditures "because the additions were needed and the directors did not feel the time propitious for financing." It took all the credit obtainable upon his personal fortune, he said.

Details and tentative terms of the proposed Otis, Midland Steel Products and Trumbull combination were formulated at a conference of steel company officials and bankers in New York last Friday. The plan provided for the formation of a new company to be headed by President E. J. Kulas of Otis Steel and Midland Steel Products. One proposal for capitalization provided for $30,000,000 in bonds, about $33,000,000 in preferred and 1,760,000 shares of no par common.

Chief objection to the merger on the part of Trumbull interests arose from the provision that Trumbull preferred and common would be exchanged share for share for the corresponding stocks of the consolidated companies. Objection also has been raised to inventory figures listed in the merger plans. Otis Steel preferred stockholders, it is said, would get 1¼ shares of the new preferred for each share held, the additional ¼ share being to take care of accumulated dividends amounting to $29 a share. Midland interests also are reported to be urging modification of the terms. Discussing the proposed merger President Kulas said that a

Pertinent Facts of Proposed Steel Merger

	Shares common (no par)	Preferred stock	Funded debt	Total preferred and funded debt	Ingot capacity gross tons	†Capitalization per ton ingot capacity
Trumbull Steel	627,688	$10,000,000	*$17,500,000	$27,500,000	450,000	$76
Otis Steel	741,002	8,830,000	9,050,500	17,880,500	386,000	$74
Midland Steel Products	50,000	7,300,000	2,500,000	9,800,000	.....	.....
Total	1,418,690	$26,130,000	$29,050,500	$55,180,500	.....	.....
(1) Tentative Merger Plan	1,760,000	$33,000,000	$30,000,000	$63,000,000	.....	.....
(2) Tentative Merger Plan	1,550,000	$34,500,000	$30,000,000	$64,500,000	.....	.....

†Includes common stock at current market value.
*Sum of debenture issue recently floated.

"difference of opinion has developed as to Trumbull inventory. A complete inventory is to be taken and I do not think it will be completed short of two weeks."

Trumbull Steel Co. was incorporated in 1912 and it manufactures a diversified line of steel products, chiefly tin plate, sheets, etc. It has half interest in the Trumbull Cliffs Furnace Co.; one-half interest in the Trumbull Coal Co.; and one-quarter interest in the Mesabi Cliffs Iron Mining Co. Its annual capacity of 450,000 tons is expected to be increased with new plants in operation. The Otis Steel Co., which also was organized in 1912, operates blast furnaces, open-hearth furnaces, by-product coke ovens, a blooming mill, a bar mill and finishing mills. Its annual ingot capacity is 383,000 tons. Midland Steel Products Co. was formed through the merger of Parish & Bingham Co., Cleveland, and the Detroit Pressed Steel Co. and it is one of the largest single producers of automobile frames in the country. The combined ingot capacity of the three companies if brought together would be upward of 850,000 tons.

Say Western Wire Mills About to Merge

B. L. Sommer, president of the Keystone Steel & Wire Co., Peoria, Ill., has sent the following notice to stockholders of the company:

"An important announcement is in course of preparation which will go forward to you in the course of the next few days. I believe the contents of the announcement will be of great interest and advantage to you.

"In the meantime, you may be approached by some one desiring to buy your stock. I would suggest that you await receipt of the announcement before referred to before reaching a decision to sell."

For more than a year rumors linking together the western independent makers of wire and wire products have been afloat. The notice by Mr. Sommer is regarded as the forerunner of action in this connection.

To Build Terminal

Weirton, W. Va., Sept. 1.—The Weirton Steel Co. has been granted a federal permit to build a river loading terminal at its plant in Weirton. An additional tonnage of 500,000 is expected to result from this new project. The new terminal will be about 62 miles south of Pittsburgh and will be equipped with a 200-foot loading dock and a 400-foot unloading dock. Three ice breakers will be installed. It will be necessary to dredge approximately 36,000 cubic yards of material from the harbor at that point. The docks and harbor facilities will enable the Weirton company to handle coal from its mines above Brownsville to the coke plant by river. Finished products can be shipped downstream upon their completion.

Magnetic Analysis Needs More Study

(*Concluded from Page* 559)

physicist and the metallurgist. It is impossible of solution otherwise.

In recent years, the magnetic laboratory of the Bureau of Standards has given attention primarily to investigations of a fundamental nature in the field of magnetic analysis. A study has been made of the magnetic properties of a series of pure iron-carbon alloys. Fig. 8 shows the variation of the value of magnetic saturation with carbon content in well annealed material. A considerable amount of attention has also been given to the possibilities of the so-called reluctivity relationship for expressing quantitatively the effect of various factors. It may be of interest to describe briefly some of the results in this line.

For pure and homogeneous materials, the reluctivity above a certain minimum value is a linear function of the magnetizing force and may be expressed by the equation

$$P = X + O\ H$$

in which X and O are constants depending upon the material. As the values of X and O do not depend upon the degree of magnetization, they may properly be called magnetic constants. O is numerically equal to the reciprocal of the saturation value of magnetization and X is a measure of the rate at which saturation is approached. If the material for any reason, such as the presence of two or more components magnetically distinct or the existence of mechanical strains, is inhomogeneous, the linear relationship no longer holds. The reluctivity line is then the resultant of a number of distinct component lines, which may have different values of X and O. The composition of two components having identical values of O but different values of X on the basis of a parallel arrangement within the sample is illustrated in Fig. 9. Such a condition might exist in a wire of homogeneous material having internal strains due to the drawing operation. The stresses in this case would be mainly longitudinal and the components therefore magnetically in parallel. This figure shows that the reluctivity line resulting from the combination of two parallel straight lines has a distinct curvature. The corresponding magnetization curves are also shown.

This relationship has been used in a study of the effect of mechanical stress on the magnetic properties of steel wire used in the manufacture of wire rope. Fortunately for the success of this investigation, the material was apparently homogeneous magnetically except for the effect of stress. The apparatus used is shown in Figs. 10 and 11. The wire was subjected to the influence of tensile loads of different amounts and the magnetic properties observed while it was held at various values of tension. It was found that the curvature of the reluctivity line increased with increasing loads. The results shown in Table I indicated that the material for tensions below the elastic limit was composed of A_1 per cent in tension and A_2 per cent in compression, and gave values of X corresponding to the two conditions. It was not possible, however, with the data at hand to determine the relation between X and stress, having had no knowledge of the initial condition as regards stress.

After the various values of O, X and A had been obtained, values of reluctivity corresponding to various values of magnetizing force were calculated by the use of these constants and compared with the observed values. The agreement, as shown in Table II, is well within the limits of experimental error.

It must be pointed out that this method of analysis is valid only in the special case where there are only two components present having the same value of O and in parallel arrangement. The analysis could not be made on this basis when the elastic limit had been passed as the material then had a third component which had failed mechanically but which still carried magnetic flux. Although the method of analysis just described has a limited application, it is thought that the reluctivity relationship has many possibilities and should be investigated more fully.

The ultimate purpose of this paper is to indicate something of the nature of the problem and to arouse interest in fundamental investigation for the establishment of the basic relationship which must be discovered if magnetic analysis is to take its proper place as one of the most powerful tools in the hands of the physical metallurgist.

Current Statistics of Industry

Malleable Output Again Shows Decrease

Washington, Sept. 1.—Production of malleable castings for July totaled 57,229 tons, according to data from the department of commerce. This constitutes a slight drop from 58,881 tons in June. The total tons booked increased some 8.3 per cent from 47,303 to 56,933, while shipments again fell from the June figure of 58,473 to 54,863 tons. Following ars further comparisons:

1924	Total tons produced	Per cent of capacity	Total tons booked	Monthly capacity
July	31,159**	28.4	30,200	109,855
August	36,727**	32.6	34,627	112,496
September	41,507**	36.9	48,129	112,349
October	50,066***	43.8	54,589	114,264
November	47,987**	42.5	48,866	113,011
December	58,773****50.9		46,541	115,474
1925				
January	66,367****57.6		61,140	115,179
February	60,220**	53.0	49,673	113,530
March	61,245**	53.5	56,481	114,506
April	62,962***	55.1	58,001	114,195
May	61,003***	53.9	50,594	113,260
June	58,881***	51.5	47,303	114,284
July	57,229**	50.2	56,933	114,144

**Includes 4 plants reported idle.
***Includes 5 plants reported idle.
****Includes 6 plants reported idle.

Steel Barrels Still Drop

Washington, Sept. 1.—Production of steel barrels in July totaled 497,152 pieces, the third consecutive monthly drop since the high point in April, according to reports to the department of commerce from 30 manufacturers. Shipments also declined but unfilled orders turned upwards for the first time since April. Further comparisons follow:

	Production	Shipments	Unfilled orders for delivery within 30 days	Unfilled orders for delivery beyond 30 days
1924				
August	396,112	398,312	201,131	514,349
September	385,212	389,064	218,830	687,040
October	447,900	441,900	238,426	444,107
November	391,401	389,230	549,188	681,620
December	413,735	407,474	312,502	1,273,532
1925				
January	420,127	415,040	345,696	1,028,551
February	413,823	407,781	313,544	1,022,580
March	505,429	510,928	399,940	864,920
April	594,971	605,424	411,053	726,499
May	570,962	569,670	313,123	637,230
June	514,913	508,880	269,964	582,630
July	497,152	506,894	314,727	974,656

Furniture Sales Gain

Washington, Sept. 1.—Steel furniture sales recouped the loss of July in August figures by the department of commerce, based on reports from 32 manufacturers in the business group and 15 manufacturing shelving. Each item in the following comparison increased over June except shipments of shelving.

	Totals
1919	$10,895,203
1920	17,669,303
1921	14,327,830
1922	12,928,026
1923	16,834,029
1924	17,381,252

Business Group

1924	Orders received	Shipments	Unfilled orders
September	$1,589,994	$1,519,078	$1,193,871
October	1,761,431	1,783,162	1,184,731
November	1,615,912	1,678,636	1,216,144
December	1,914,038	1,872,677	1,220,232
1925			
January	2,206,952	1,972,137	1,455,890
February	1,986,151	1,939,097	1,501,460
March	2,012,322	2,027,863	1,482,859
April	1,964,959	2,009,199	1,466,428
May	1,855,552	1,918,869	1,383,424
June	1,794,156	1,804,599	1,392,540
July	1,841,138	1,809,174	1,464,793

Shelving

1925			
March	$ 606,754	$ 539,972	$ 515,434
April	566,834	650,769	436,048
May	523,426	549,272	372,296
June	501,182	514,117	360,089
July	510,815	482,187	398,973

Iron Ore and Ferroalloy Shipments Lower

Washington, Sept. 1.—Iron ore mined in 1924 amounted to 54,267,419 gross tons, a decrease of 22 per cent as compared with 1923, according to final figures compiled by the department of commerce. Of the 20 states producing iron ore in 1924 only five, Alabama, Missouri, Ohio, Utah, and Washington, contributed more ore than in 1923. The shipments of iron ore in 1924 amounted to 52,083,375 gross tons, valued at $151,307,105, a decrease in quantity of 25 per cent and in value of 37 per cent as compared with 1923. The average value per ton of iron ore at the mines in 1924 was $2.91, which is 54 cents less than in 1923. The stocks of iron ore at the mines at the end of 1924 amounted to 12,410,619 gross tons, compared with 10,165,875 tons at the end of 1923, an increase of 22 per cent.

Shipments of ferroalloys declined 14 per cent, from 579,817 tons in 1923 to 497,244 tons in 1924. Values were respectively $49,877,231 and $43,249,948. The following shows gross tonnages shipped from furnaces:

	1923	1924
Ferromanganese	226,365	232,821
Spiegeleisen	134,086	76,179
Ferrosilicon (7 per cent or more silicon)	184,067	150,021
Ferromolybdenum	118	107
Ferrotungsten	1,485	741
Ferrovanadium	1,432	1,355
Other varieties	32,264	36,020
	579,817	497,244

Locomotive Sales Slump

Washington, Sept. 1.—Sales of locomotives in July as reported to the department of commerce, totaled but 66, as compared with 110 in June. The July figure is the smallest since April 1922. Unfilled orders also dropped. Total sales for the first seven months of 1925 amounted to 648, less than half the 1644 of 1923 and far below the 851 in 1924. Following are further details:

Year and month	—Shipment— Total	Domes.	Unfilled orders Total	Domes.
1920 monthly ave.	199	110	1,323	894
1921 monthly ave.	112	69	337	206
1922 monthly ave.	106	88	889	791
1923 monthly ave	226	249	1,592	1,511
1924 monthly ave	122	110	479	424
1923				
Total (7 months)			1,644	1,543
1924				
Total (7 months)			851	787
1925				
January	90	45	407	351
February	85	73	397	343
March	109	93	447	351
April	92	82	477	362
May	96	68	467	353
June	110	61	397	300
July	66	58	378	283
Total (7 months)			648	480

July Stoker Sales Gain

Washington, Sept. 1.—Sales of mechanical stokers in July totaled 147, as compared with 128 in June and 115 in July 1924. Of the 147, 30 were fire tube and 117 water tube boiler installations. Following are further data compiled from reports to the department of commerce from 13 establishments.

	Stokers sold	Fire tube boilers	Water tube boilers
1923 Total	1464	177	1287
February	110	11	99
March	89	12	77
April	89	15	74
May	64	3	61
July	115	14	101
August	94	17	77
September	73	27	46
October	104	7	97
November	106	11	95
December	91	18	73
1924 Total	1128	161	967
January	57	4	53
February	135	28	107
March	131	17	114
April	120	23	97
May	122	23	99
June	128	26	102
July	147	30	117

Electric Engines Drop

Washington, Sept. 1.—Shipments of electric locomotives during the quarter ending June 30, 1925, totaled 139 compared with 158 for the first quarter of the year, according to reports to the department of commerce from ten manufacturers.

Industrial Men in the Day's News

Joseph J. Tynan, New Vice President of Bethlehem Steel Co.

APPOINTMENT to a vice presidency of Bethlehem is a natural fruit of his industry and self-development.

HE WAS not afraid to spend much time in work and more in study to lay the foundation of a career.

HE IS numbered among those who contributed greatly to the nation's war strength by successfully meeting new and great responsibilities.

THAT class lines are absent in America and that ability may win its way from the bottom to the top, regardless of a man's humble start is proven again in the recent appointment of Joseph J. Tynan as vice president of the Bethlehem Steel Co. in charge of the activities of that company and the Bethlehem Shipbuilding Corp. on the Pacific Coast.

Mr. Tynan was born in county Tyrone, Ireland, and started work as a boy as a mechanic in the Sion mills. Following the example of many another Irish lad with real aspirations to get somewhere, he soon found opportunity in his native land was limited, while in alluring terms it beckoned him from across the seas. Accordingly when he was 17 years of age, in 1891, he came to New York without friends in this country and with little money in his purse and went at once to Philadelphia.

He obtained a position with the Philadelphia Engineering works at Front and Mifflin streets and his interest was attracted by the pneumatic tools which were being developed. "They were in their infancy then," says Mr. Tynan, "and I saw, as did many others, that the pneumatic tool would revolutionize all shop work."

To gain practical experience with these tools he took a position at $2 per day in the plant of the Baldwin Locomotive Works. He stayed six months, doing machine work and learning all he could of the air tools, meanwhile being engaged in boring cylinders and lining locomotives.

From that employment he went to the yards of the William Cramp & Sons Ship & Engine Building Co., at Kensington, near Philadelphia. This was one of the most important changes in his life as he learned the shipbuilding business in theory and practice under the best masters. Not only did he work full time, and the days were long, but he read and studied at night. He attended Spring Garden institute and later night school at the Franklin institute in Philadelphia where he absorbed all the technical knowledge he could acquire.

As a result he was made assistant foreman at the Cramp yards in six months and a foreman in a year. In these capacities he worked on the ST. PAUL and ST. LOUIS, the first American-built liners. He remained in the Cramp employ from 1894 to 1906, becoming assistant general manager in these dozen years. His inventive genius is attested by more than 50 patents issued to him during this period. The first was for an airport cutter.

Knowledge of Mr. Tynan's mechanical skill had come to the ears of Charles M. Schwab of the Bethlehem Steel Co. The latter watched and studied his record and his progress. Finally in 1906 he tendered him the position of general manager of the Union Iron Works at San Francisco. This Mr. Tynan promptly accepted.

A notable achievement by the Union Iron Works under Mr. Tynan's direction was the winning the blue pennant offered by the United States shipping board for the most tonnage produced by any yard in the United States in 1918. In that year his organization laid 61 keels, launched 51 hulls and delivered 37 vessels. His foresight and his skill in handling men and getting them to give their best was responsible for this result, which was of great aid to the country in its war preparations.

Another accomplishment by Mr. Tynan during the war

was conspicuous. Early in 1915 he took a crew of picked men and slipped quietly away from San Francisco to the yard of the Canadian-Vickers Co., five miles outside Montreal where he organized the yard force of 3000 men for intensive production. In five months this force turned out 10 submarines for the British admiralty.

Mr. Tynan is not circumscribed by his business relations and is one of the most widely known men on the Pacific Coast. He takes a deep interest in all movements to develop the natural resources of the West and to further the business progress of that region. He is a member of the American Society of Marine Engineers and of the Society of Naval Architects and Marine Engineers.

Men of Industry

Personal News of a Business Character Pertaining to the Iron and Steel and Related Fields of Enterprise

CHARLES M. SCHWAB, chairman of the Bethlehem Steel Corp., has been notified that he has been named an officer of the French Legion of Honor.

* * *

Alexander Glass, chairman of the board of the Wheeling Steel Corp., has returned from a trip to Europe.

* * *

W. H. Clark has been appointed general superintendent of the Lebanon Iron Co., Lebanon, Pa., succeeding John C. Brown, resigned.

* * *

D. F. Bush, chairman of the board of Rogers Brown & Crocker Bros. Inc., and Arthur A. Fowler, president, have returned to New York from a business trip to England.

* * *

C. H. Berry, technical engineer of power plants with the Detroit Edison Co., has been made associate editor of *Power*, a McGraw-Hill publication, New York.

* * *

Guy Hubbard, for ten years active in the machine tool industry, has joined the editorial staff of the American Society of Mechanical Engineers with headquarters in the New York office.

* * *

R. M. Scott has been appointed foundry manager for the Packard Motor Co., Detroit, succeeding Fred Erb. He formerly was connected with the Cleveland Punch & Shear Works.

* * *

V. C. Cartus, for the past seven years eastern mill representative for Joseph T. Ryerson & Son Inc., has resigned to become associated with A. B. Murray & Co., New York City, in the steel warehouse business.

* * *

W. C. McKee, for several years general manager of the Pulaski Iron Co., Pulaski, Va., has entered the employ of the By-Product Coke Corp., Chicago, which operates the Federal furnace at South Chicago. He is succeeded by Owen Stull of Big Stone Gap, Va., who has been in charge of the mines of the Intermont Coal & Iron Corp., at that place.

* * *

Arthur M. Watkins has become a member of the sales staff of the Vandyck Churchill Co., New York. He formerly was sales manager for the Consolidated Machine Tool Corp. of America.

* * *

H. Hollesen of H. Hollesen Inc., 17 Battery Place, New York, is in Germany where he is conferring with producers of iron, steel and related products. H. Hollesen Inc. represents the Stinnes interests in this country.

* * *

Herman L. Barnes, Chicago, associated for several years with Whitman & Barnes and the Sexton Mfg. Co., has been made general manager of the American Forge & Machine Co., Canton, O., and has assumed his duties there.

* * *

O. T. Lawson, who has been with the Trippensee Closed Body Corp., Detroit, has resigned and entered the employ of the Bendix Brake Co., South Bend, Ind., as purchasing manager. The latter company manufactures four-wheel brakes for automobiles.

* * *

E. E. Seyfert, formerly district manager of sales at Philadelphia for the Corrugated Bar Co. and later for the Kalman Steel Co., has become associated with the Federal Alloy Steel Corp., Drexel building, Philadelphia. He will have charge of sales of reinforcing bars.

* * *

W. E. Emmett has been made head of the structural department of the Moore Drydock Co., Oakland and San Francisco, succeeding Charles Overmire. He is a graduate of the Kansas State university and has been connected with the Missouri Valley Bridge & Iron Co. and the Kansas City Structural Steel Co. for the past 14 years. Recently he has been assistant to Mr. Overmire.

* * *

Baron Carl von Gienanth, managing director of Gebruder Gienanth, Eeisenberg, Germany, manufacturer of stoves, soil pipe and other iron castings, is making a tour of the eastern portion of the United States for the purpose of studying American methods of production. Baron Gienanth was in America 25 years ago on a similar mission. He stated that in the interval the foundry industry in America has made greater strides than in any other part of the world.

* * *

E. E. Goodwillie, recently appointed manager of steel sales on the Pacific Coast for Bethlehem Steel Co., to succeed Leigh B. Morris, resigned, is a graduate of Cornell university, 1910. He spent two years in the Steelton mills of the Pennsylvania Steel Co. and until these mills were absorbed by the Bethlehem Steel Co. was in charge of the sales office at Pittsburgh. At that time he was transferred to the Cleveland sales office of the Bethlehem Steel Co. and in 1922 was made Chicago district sales manager.

* * *

C. A. Timmons for over 25 years with the American Sheet & Tin Plate Co. at its mill at Elwood, Ind., and sales offices in Chicago, St. Louis and New York, and of late with the Bethlehem Steel Co., New York sales office, has joined the Fourway Realty Corp., 341 Northeast Second avenue, Miami, Fla. Other former steel men associated with the Miami company are: Theodore A. Gessler and W. P. Andrews, both formerly with the American Sheet & Tin Plate Co., George Damerel, Weirton Steel Co., H. H. Fuller, Bethlehem Steel Co., and John B. Kingsley, American Car & Foundry Co.

Corporation Plans Alloy Mill

Designs Approved for $4,000,000 Specialized Bar Plant at South Chicago—Will Hook Up With Electric Furnace Plant—Marks More Vigorous Participation of Leading Producer Into Special Steel Industry

PLANS have been prepared and approved, according to authoritative advices, whereby the United States Steel Corp. in the near future will proceed to establish in the Chicago district a large plant for the production of commercial alloy steel. This extension will take the form of a large bar mill plant to be erected at South Chicago adjoining the works of the Illinois Steel Co. The site now is being prepared at South Chicago preliminary to the inauguration at no distant date of active construction work.

The new mills will be hooked up with the present electric steel capacity of the Illinois Steel Co. at South Chicago. The latter consists of four furnaces of the heroult type of 15 and 25-tons individual capacity. The estimated annual capacity of the electric steel plant which is the largest unit of its kind now possessed by the Steel corporation is approximately 150,000 to 160,000 tons of ingots annually.

The new mills will embody all the latest refinements of construction and design. They will be electrically driven. Their total cost will involve approximately $4,000,000.

The new enterprise of the Steel corporation is considered to have considerably more than passing significance. It represents the first elaborate move of the Steel corporation to become a major factor in the alloy steel industry. While the Corporation has been producing alloy steel in commercial form and quantity chiefly at South Chicago, its participation in this branch of production has not been on a scale involving or necessitating the erection of a specially designed plant of large capacity for this purpose. The development of the Steel corporation properties and capacities since its formation has had to do mainly with the production of ordinary carbon steels.

The decision of the leading producer to go into the production of alloy steels in a large way bears back also upon the general accepted fact of the excess of common steel capacity in the industry at the present time and suggests a more vigorous policy on the part of the former to engage in specialization.

The selection of the Chicago district as the site for the new works is regarded as a further recognition of the anticipated future growth of the steel market in the Central West. Furthermore, it points to the concentration of the demand for alloy steels in middle western territory principally because of the location there of the bulk of the automobile industry. These factors, taken in connection with the character of the primary steel capacity already established there, apparently have entered strongly into the calculations of the executives and engineers of the Steel corporation in fixing upon Chicago as a strategic location for the production of alloy steel on a tonnage basis.

The latest development of steel capacity to be undertaken by the Steel corporation brings again into view the rapid strides that have marked the development of the manufacture of alloy steel in this country in recent years. During the past 15 years production by this process has grown by approximately 400 per cent, reaching its highest point in 1923 when a total of 2,106,489 gross tons of alloy steel ingots and castings was turned out by the various works. The 1924 output, a much smaller year for general steel production, was only slightly less with 2,026,409 gross tons. The latter was made up of 1,940,461 tons of ingots and 85,948 tons of castings. While the overwhelming proportion of the total output is being made today in basic open-hearth furnaces, that portion contributed by electric steel has steadily advanced. In 1923 electric steel production amounted to 165,922 gross tons of ingots and 29,054 gross tons of castings, a total of 194,976 gross tons. The figures for 1924 were 159,742 gross tons of ingots and 28,821 gross tons of castings, a total of 188,563 gross tons.

Rate Dispute

May Postpone Revision In Illinois—Shippers Oppose Carriers Plans

Chicago, Sept. 1.—If the Illinois railroads do not adopt a more conciliatory attitude in their attempted upward revision of freight rates on iron and steel articles, following the interstate commerce commission decision in the Jones & Laughlin case, a contest that will postpone the effective date in Illinois many months is likely to result.

In the Jones & Laughlin proceedings the Illinois carriers contended that present rates north of this line were not prejudicial or unreasonable. Tariffs submitted to shippers Aug. 19 propose increases as high as 100 per cent north of this line. Shippers and receivers concede that it is impossible to adjust rates south of the line without changes north and say that to a great extent the retention of existing relationships is more vital than the rates themselves, but a radical scaling down of rates is demanded.

The carriers have proposed an advance from 17½ to 23 cents on iron and steel articles from Chicago to St. Louis. They would increase the present Milwaukee-St. Louis rate from 21½ to 27 cents. The present merchant iron rate of 9½ cents from Chicago to Freeport, Ill., would be advanced to 15½ cents, and the structural material rate from 11½ cents. to 15½ cents. The rate from Chicago to Milwaukee would be advanced from 8 to 9½ cents. The Chicago-Aurora rate would be increased from 6 to 9½ cents. The Chicago-Rockford rates of 9½ cents on merchant iron and 11½ cents on structural material would be pushed up to 14 cents. In some cases present rates would be doubled. It is estimated that the carriers' proposals would add $15 to the cost of every freight car made in the St. Louis district out of Chicago steel, thereby destroying the competition of St. Louis carbuilders with Chicago builders.

Shippers and receivers, generally accepting the fact that some advances are certain, will attempt to work in co-operation with the carriers and a committee, headed by Murray N. Billings, Illinois Steel Co., Chicago, will inaugurate sessions here Sept. 15. Meanwhile, shippers, receivers and carriers will go before the commerce commission at Washington and seek postponement of the effective date, now set for Oct. 18. Mr. Billings, C. L. Lingo, Inland Steel Co., Chicago, and E. W. Brough, Crane Co., Chicago, will represent the shippers and receivers in the request for further time.

Round About in Industry

Gossipy Stories from Pittsburgh

"A Whale of a" Steel Roll

Liquid Gold, and Gas

Landmarks Are Disappearing

By W. H. Lloyd

ITTSBURGH, Sept. 1.—If a roll the size of one recently produced at the Vandergrift, Pa., steel foundry of the United Engineering & Foundry Co. were made of bread in a bakery, it probably would be larger enough to feed the 5000 of biblical fame, with some left over. The roll which required 217,000 pounds of molten steel was produced for the plate mill built about nine years ago for the Lukens Steel Co., Coatesville, Pa. The finished roll is 50 inches in diameter, 204 inches long and weighs 152,000 pounds. The overall length is 24 feet. The roll is so large that special equipment had to be manufactured to enable the United company to finish it, and it required the heaviest type of railroad car for transportation. The plate mill for which it is intended is the largest in the world.

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Evidence that Pennsylvania still has much "liquid gold," as oil often is called, underlying its surface recently was disclosed near Kane, Pa. The largest gusher struck in oil fields in many years was drilled in on the Fred H. Pittock lease seven miles southeast of Kane on July 26, and in the first 24 hours the well had flowed 240 barrels. This, it is claimed, is the best producing well in the state of Pennsylvania. The strike was made in the Cooper sand only 15 to 30 feet deeper than scores of wells in that section which are producing from three to 10 barrels per day. The well has caused considerable excitement among producers and indications are that a number of new wells will be drilled in this field and old ones drilled deeper. The well also is producing 150,000 feet of gas daily.

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Speaking of wells, after having reached a depth of 7756 feet, practically one and one-half miles, and after three years of almost constant drilling, a gas well at Longbridge near Latrobe, Pa., has been capped and will not be drilled deeper. It is owned by the Peoples Natural Gas Co., and a sign has been placed on the rigging proclaiming it the deepest well in the world. It is located along the Lincoln highway and many autoists stop daily to view it. Drilling began May 23, 1922, and the first casing put in was 60 feet long and 13 inches in diameter. The next was 1100 feet long and 10 inches in diameter, while the third casing was 3900 feet long, measuring 8 inches in diameter. Next 6200 feet of 5⅝-inch casing was placed, and the last string of casing was 6794 feet of 4 inch.

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Many landmarks familiar to "old timers" in the iron and steel business in Pittsburgh and vicinity have disappeared recently. The old Shoenberger works of the American Steel & Wire Co.; the Park works of the Crucible Steel Co., and numerous others gradually are disappearing. A familiar mark for 35 years on the southside skyline, the 115-foot smokestack at the No. 3 foundry of the Jones & Laughlin Steel Corp., Twenty-first and Mary streets, now is being razed. Brick after brick is being pried loose from the top of the huge chimney, which originally was built by the Phillip Window Glass Co., for use in making glass. It has not been used since 1898 when the Jones & Laughlin company took it over.

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Pittsburgh's assessed valuation this year increased $37,598,090 over 1924, according to recent figures given the city council by Thomas C. McMahon, chief assessor. The total figure for 1925 is $988,830,120, as against $951,232,030 in 1924. Building valuation makes up the larger part of the increase, or $20,863,410, while the land valuation increased $16,744,680. In 1924 the total land assessments were $530,730,600, and buildings $420,501,430, or a total on land and buildings of $951,232,030. In 1925 the land value is $547,475,280, and buildings $441,354,840, or a total of $988,830,120.

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A boy's desire to flatten two large bolts caused the wreck of an entire coal train on the Baltimore & Ohio railroad at Rowena, Pa., near Somerset, recently. Joseph Leasack, 13, has confessed to having placed the bolts on the track the night of July 10, the same night Company C, National Guard of Pennsylvania, departed for the Mt. Gretna camp. The soldiers' train passed over the bolts safely but a coal train coming along shortly thereafter was wrecked. Investigation by the railroad police brought about the arrest of the boy and his brother. The boy's only reason for placing the obstruction on the track was that he wanted the bolts flattened out.

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Word from Huntington, W. Va., is of considerable interest to shippers of coal, iron and steel, and other products by river. The old river towboat BOAZ, famous along the Kanawha and Ohio rivers for its long service, the oddity of its name and the number of accidents in which it has figured, is being dismantled at Point Pleasant, Pa. The boat is said to have figured in more accidents and lost more coal than any towboat that has ever plied the Ohio or Kanawha rivers. This boat once took the unprecedented tow of 45 barges of Pittsburgh coal to Louisville, Ky., this being one of the few trips made without mishap.

The total capacity of water wheels installed in American plants of 100-horsepower or more in March, 1925, represents an increase over March, 1924, of nearly 10½ per cent, according to statistics given by the geological survey, Washington. The capacity in the latter month was 9,087,958 horsepower, while in March of this year it was 10,038,655, which is an increase of 951,000 horsepower. Of this increase 939,000 horsepower, or 99 per cent, was in public utility power plants, and 12,000 horsepower or 1 per cent in manufacturing plants.

Belgian Competition Is Hurting Britain

(*Concluded from Page* 591)

34,678 tons a year ago. Some large Welsh firms are laying out their plants for joist production, and are taking orders as low as £7 15s ($37.66), as against the recent figures of £8 ($38.88) to £8 5s ($40.09).

An important element in the reduced prices is the weakness of coke, which can be bought at slightly easier figures. This largely accounts for the small parcels ordered, consumers relying on still lower pig iron prices. No. 3 Cleveland is rather easier at £3 9s 6d ($16.88), probably not quite at bottom figure. East coast mixed numbers are £3 15s 6d ($18.34).

On the West Coast output is scarcely sufficient for demand, but the ample stocks available serve to meet all requirements. It is likely that two more furnaces will be put in blast by the Barrow company, making the number eight, the restart in this case, however, being necessary because certain mills about to be reopened derive their power from blast furnace gas. Prices in that area are inclined to be somewhat easier. In the Midlands, the Northampton and Derbyshire prices are unchanged, on the basis of £3 2s 6d ($15.18) and £3 7s 6d ($16.40) respectively for Northampton and Derbyshire No. 3 brands.

New orders are rather scarce for steel and are restricted to small quantities, the frequent roll-changing substantially reducing output. The demand from the builders of rolling stock is insufficient to replace the output, but a useful line has been booked by Cammell Laird & Co. Nottingham for 160 all-steel coaches, comprising 40 motor and 120 trailer carriages for the Bombay Baroda and Central India Railway. The North British locomotive company have also received an order from the Southern railway for 15 locomotives. Constructional work is for the most part restricted to small tonnages.

In tin plate many works have retired from competition on the ground that they do not propose to sell until the value per box rises to 19s 6d ($4.73). At present it ranges between 19s ($4.61) and 19s 3d ($4.67).

French Steel Market Is Encouraged

PARIS, Aug. 21.—(*European Staff Service*)—For the time of year and in the face of disturbing factors still prevailing in Western Europe, the French iron and steel market is satisfactory as to volume, both domestic and export. Domestic prices are more remunerative than export, but in both cases profits are comparatively small. Although many factors should tend to increase prices the sentiment is that no marked advance will take place soon. The present circumstances of the French iron and steel industry are strengthened by depressed conditions in Great Britain, the metallurgical strike in Belgium, which has been on nearly two months, and the fact that German producers are more interested in domestic trade than in export business.

Pig iron is active. No. 3 foundry pig iron, 2.5 to 3 per cent silicon, is fixed at 345 francs ($16.10) per metric ton.

The demand from Great Britain is checked to a certain extent by the dropping prices of the British product. The French export quotation is about £3 5s ($15.80) f.o.b. Antwerp or Channel ports. In adding freight rates, the British domestic price of £3 12s ($17.45) is difficult to meet. Negotiations are still going on among French producers of hematite to arrive at a price-fixing agreement, but no decision has been reached. Hematite pig iron is quoted at 410 francs ($19.15 to $21). British competition in this market is practically eliminated, owing to high prices. The Italians are buying French hematite pig iron at 410 francs ($19.15), f.o.b. Modane. The production of ferromanganese is aided by a good supply of water-power. Prices range from 1630 francs to 1650 francs ($76 to $77.25).

In steel prices remain as fixed by the O. S. P. M. and competition is mostly limited to time of delivery. The home demand for semifinished products is good and manufacturers are somewhat losing interest in export business. Basic bessemer billets are quoted at 440 francs ($20.55) in the home market and £4 12s ($22.40) for export. French railroads are inquiring for 7000 tons of beams. The base price is 500 francs ($23.25), about £5 5s ($25.50) being asked for export. Merchant bars are as much as 560 francs ($26) on the home market and £5 8s ($26.25) f.o.b. for export.

Railmakers are looking forward to a large volume of inquiry from the French railroad administrations. There are signs that the differences of opinion which separated various French manufacturers in view of the formation of a rail syndicate are being overcome. Plates and sheets are calm and concessions are granted on attractive business for plates. In the Paris district plates are quoted at 770 francs ($35.95), medium-sized sheets at 870 francs ($40) and the light gages at 1060 francs ($49.50). The export price for plates is about £6 8s ($31.15).

German Exports Bring Small Profit

BERLIN, Aug. 21.—(*European Staff Service*)—A slight revival has been noted in German export business, owing to the strike in the Belgian iron and steel industry and also to the threatening strikes in the British and Saar coal mines. However, since domestic prices continue to be more profitable to producers there is just enough inclination to sell abroad to keep the markets open. In fact, the difference between domestic and export prices in Germany has further increased recently and in order to encourage export trade an agreement has been arrived at between manufacturers and rerollers on the one hand, and the raw steel union on the other, by which special reduced prices are fixed for raw or semifinished material which is to be used in the manufacture of products for export. This system was in effect prior to the war and was resumed July 1, 1925.

German exports of iron and steel have decreased from 277,901 metric tons in May to 238,818 tons in June, whereas imports increased from 134,285 tons to 143,068 tons. However, exports for the first half of the year totaled 1,639,246 metric tons as against 748,487 tons in the corresponding period of 1924, but they are still only 50 per cent of the tonnage exported during the first six months of 1913 when the figure was 3,269,230 tons. Exports of merchant bars and structural steel decreased from 37,567 tons in May to 33,455 tons in June, while plates dropped from 32,292 tons to 22,969 tons. It is only in the galvanized products department that foreign sales increased; the exports of galvanized wire were 6376 tons in May and 11,878 tons in June, while galvanized sheets increased from 963 tons to 1076 tons.

Domestic prices have strengthened. This is partly due to the number of selling syndicates which have recently been formed and to the action of consumers who have been buying on a larger scale as they feared that prices would advance. The selling syndicates now formed are for plates, bars, wire rods and hoops and bands, to which should be added the syndicate handling semifinished products which was formed some time ago. Negotiations are still being held in connection with the formation of selling combines in other departments. The advance in iron and steel prices is also ascribed to the reduction in output which has been decided upon by the raw steel syndicate, which is 35 per cent of total capacity for August as against 25 per cent in June and July.

Whereas the output of ingots is thus limited, the production of semifinished products is not limited. The production of steel ingots in Germany is at present estimated at a yearly rate of about 9,200,000 metric tons as against 12,000,000 tons in 1913 for the German territory within present boundaries. The general buying movement in the domestic market is impeded by the growing shortage of money, the most satisfactory business being transacted in the sheet department.

Obituaries

FREDERICK E. MESTA, recently elected president of the Mesta Machine Co., West Homestead, Pa., died suddenly Aug. 31 at Pittsburgh. Mr. Mesta was born Aug. 4, 1876, in Bethel township, Allegheny county, Pa. He obtained his preparatory education at the Leechburg, Pa., high school, in which city he was first associated with the iron and steel industry with the Leechburg Foundry & Machine Co. In 1898 he took charge of the construction of the present plant of the Mesta Machine Co. and was made general superintendent. Admitted to directorship and made vice president in 1912, he held his position until the recent death of his brother, George Mesta, brought him the post of chief executive of the company.

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George W. Wills, proprietor of the Wills Supply & Machine Co., Dover, O., died there Aug. 6 at the age of 64.

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George H. Shields, 49 years old, a director of the Keeler Brass Co., is dead in Grand Rapids, Mich.

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Edward S. Hartman, aged 82, formerly president of the Empire Plow Co., Cleveland, died Aug. 26.

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Henry T. Gibbard, for many years an engineer for the Detroit branch of the American Car & Foundry Co., died in Detroit recently.

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John F. Johnson, founder and president of the Johnson & Field Mfg. Co., Racine, Wis., agricultural machinery, died Aug. 24 at the age of 80 years, after a long illness.

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Charles H. Kingsbury, for many years representing the Niles-Bement-Pond Co. in New England territory, died recently at his home in Quincy, Mass., aged 62 years.

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George H. Cole, assistant traffic manager of the American Smelting & Refining Co., died recently at his home in New York, aged 52 years, from cerebral hemmorrhage.

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Burnham K. Taylor, treasurer of the McMann & Taylor Co., 104 John street, New York City, one of the largest jobbers of pipe and fittings in the metropolitan territory, died of appendicitis at his home in Brooklyn, Aug. 29. Mr. Taylor was aged only 32. He graduated from Princeton university and spent two years at Columbia university. On the death of his father, George W. K. Taylor, one of the founders of the McMann & Taylor Co., in 1916, he began his connection with the business.

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Edwin T. Peters, aged 52 years, superintendent of the Stanford rolling

FREDERICK E. MESTA

mills, Stamford, Conn., brass and copper products, died recently of acute indigestion.

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George H. Barnes, associated with the American Can Co. since his retirement 10 years ago as a practicing lawyer, died suddenly of heart disease, Aug. 28, at his home in Rye, N. Y., aged 63.

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Robert J. Lynd, president of Lynd-Farquhar & Co., Boston, and prominent in the machine tool jobbing trade in New England for many years died recently at his home at the age of 50 years.

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F. L. Higginson, one of the founders of the banking firm of Lee, Higginson & Co., died recently at his home at Prides' Crossing, Mass., at the age of 84. Mr. Higginson for many years was prominently associated with industrial development in New England and with companies operating in other sections of the country, but financed at Boston. He was director among other companies of the Calumet & Hecla Mining Co. and the Superior Copper Co.

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Joseph Humpton, secretary and treasurer of the Lukens Steel Co., Coatesville, Pa., died Aug. 29 of general infirmites at an advanced age. He had spent all his business life in association with the Lukens company. When the business of Charles Huston & Sons, a partnership, was incorporated in 1890, Mr. Humpton was elected to the offices which he held up to the time of his death.

Wage Reductions Become More Numerous

A sudden increase in the number of wage reductions is reported by the National Industrial Conference board for the period July 15 through Aug. 14. The number of reductions in the February-March period was 5, and then on successively they were nine, two, eight, 12 and 89. The number of increases early in the year was four, and then on, by periods, 29, 49, 48, 37 and for July-August, 15. During the latter period nine increases occurred in the printing trades, five in building trades, and one in the textile industry. Of the 89 reductions, 83 occurred in the textile industry. Of the six remaining, two were in the rubber industry, two in manufacture of textile machinery, and one each in the paper and steel industries.

Take Site for New Strip Mill at Jackson

The site of a proposed steel strip mill at Jackson, Mich., has been secured by interests connected with Hodenpyl, Hardy & Co., New York, public utility financing and management corporation. The development is said to be in charge of Fred M. Caldwell, industries manager of the New York company. It is understood the first unit to be installed will be a 12-inch hot mill, other mills to be added later. The site is on the lines of the Michigan Central and Michigan Northern railroad. Choice of Jackson for the mill is based on its proximity to automobile manufacturing plants consuming large tonnages of strip steel.

News of Societies

ONE session of the twentieth annual convention of the Association of Iron and Steel Electrical Engineers, to be held in Philadelphia Sept. 14-19, will be devoted entirely to safety. This session will open the convention Monday noon, at the Benjamin Franklin hotel. In connection with the convention, an exposition of iron and steel electrical equipment will be held in the Commercial Museum. During the week motion pictures will be shown featuring various industrial subjects of interest, and on Wednesday evening, George A. Richardson, Bethlehem Steel Co., Bethlehem, Pa., will give an illustrated lecture on the Diesel type engine. The program for the convention has been arranged as follows:

Monday, Sept. 14

AFTERNOON

Safety Division

"How the Electrical Engineer and the Safety Engineer Can Be Mutually Helpful," by John A. Oartel, Carnegie Steel Co., Pittsburgh.

Tuesday, Sept. 15

MORNING

Combustion Division

"The Selection and Maintenance of Oil Circuit Breakers," by George A. Burnham, Condit Electrical Mfg. Co., Boston.

"The Selection and Maintenance of Oil Circuit Breakers," by M. J. Wohlgemuth and E. K. Reed, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Wednesday, Sept. 16

MORNING

Electrical Division

"Direct Current Armature Windings for Multipolar Generators and Motors," and "Frog Leg Windings," by W. A. Powell and G. M. Albrecht, Allis-Chalmers Mfg. Co., Milwaukee.

Thursday, Sept. 17

MORNING

Electrical and Combustion Divisions

"Electric Heat Treating Furnace Applications," by E. A. Hurme, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

"Electric Melting Furnaces," by J. A. Seede, General Electric Co., Schenectady, N. Y.

Report of electrically heated soaking pit in operation at Donner Steel Co.

Friday, Sept. 18

MORNING

"Auxiliaries and Auxiliary Drives for Steam Electric Generation Stations," by A. L. Penniman Jr. and F. W. Quarles, Consolidated Gas, Electric Light & Power Co. of Baltimore, Baltimore.

"Extending the Heat Cycle in Boiler Operation by the Use of Preheated Air for Combustion," by J. G. Worker, American Engineering Co., Philadelphia.

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Will Visit Railway Shops

An inspection trip to the Old Portage railway incline planes, one of the earliest of American railroad projects, is one of the features of the regional meeting of the American Society of Mechanical Engineers, to be held at Altoona, Pa., Oct. 5-7. Two technical sessions and a number of papers have been planned, in addition to entertainment and a visit to the Altoona railway shops. On Monday evening, honorary membership in the society will be conferred upon Gen. William Wallace Atterbury, vice president of the Pennsylvania railroad system.

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Predict Better Business Ahead

Decided cheerfulness over future business prospects prevailed at the annual summer outing of the New England Foundrymen's association, held Aug. 12 at Providence, R. I. Over 150 foundrymen from this district attended the meeting which was held at the Ponham club. It was pretty well agreed that fall prospects for business were steadily improving.

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Will Reflect Tool Progress

Postwar progress in the machine tool industry will be emphasized at the New Haven Machine Tool exhibition, to be held at Mason laboratory, Yale university, New Haven, Conn., Sept. 8-11. During the exhibition, technical sessions will be conducted by the machine shop practice section of the American Society of Mechanical Engineers. On Wednesday morning the special research committee on metal springs will meet at Dunham laboratory. Centerless grinding will be discussed at the Wednesday afternoon session while in the evening the influence of the growing aircraft industry on machine tools will be reviewed in a paper by William B. Stout, president, Metal Airplane Co., Detroit.

Convention Calendar

Sept. 3-4—Ohio State Foundrymen's association. Annual convention at Cedar Point, O., A. J. Tuscany, 5713 Euclid avenue, Cleveland, is secretary.

Sept. 8-11—New Haven Machine Tool exhibition. Annual exposition at Mason laboratory, Yale university, New Haven, Conn. H. R. Wescott, is chairman.

Sept. 9-11—Iron and Steel institute. Annual fall meeting at Birmingham, Eng. G. C. Lloyd, 28 Victoria street, London, S. W. 1, is secretary.

Sept. 10—National Association of Brass Manufacturers. Fall meeting at Hollenden hotel, Cleveland. William M. Webster, 139 North Clark street, Chicago, is commissioner.

Sept. 14-18—American Society for Steel Treating. Annual convention and exposition at Public Auditorium, Cleveland. W. H. Eisenman, 4600 Prospect avenue, Cleveland, is secretary.

Sept. 14-19—Association of Iron and Steel Electrical Engineers. Annual convention and exposition at Commercial Museum, Philadelphia. John Kelly, Empire building, Pittsburgh, is manager.

Sept. 23—Concrete Reinforcing Steel institute. Semiannual meeting at Drake hotel, Chicago. M. A. Beeman, 160 North La Salle street, Chicago, is secretary.

Sept. 24-26—American Electrochemical society. Fall meeting at Chattanooga, Tenn. Colin G. Fink, Columbia university, New York, is secretary.

Sept. 28-Oct. 2—National Safety council. Fourteenth annual safety congress at Cleveland. A. A. Mowbray, 168 N. Michigan avenue, Chicago, is director.

Sept. 30-Oct. 2—National Tool Builders' association. Annual convention at Washington. E. F. DuBrul, 630 Vine street, Cincinnati, is general manager.

Oct. 1-3—American Gear Manufacturers' association. Semiannual meeting at West Baden Springs hotel, West Baden, Ind. T. W. Owen, 2443 Prospect avenue, Cleveland, is secretary.

Oct. 5-9—American Foundrymen's association. Convention and exposition at State Fair Grounds, Syracuse, N. Y. C. E. Hoyt, 140 South Dearborn street, Chicago, is secretary.

Oct. 21-23—American Welding Society. Fall meeting and exhibition at Massachusetts Institute of Technology, Boston. M. M. Kelly, 33 West Thirty-ninth street, New York, is secretary.

Puddlers' Wages Reduced 50 Cents Per Ton

Wages of puddlers employed in the mills represented in the Western Bar Iron association will be $11.13 per ton during September and October, 50 cents less than in the two months preceding. The average sales price in July and August was 1.95c per pound, compared with 2.05c in May and June. Wages of finishing mill employes for September and October will be 4 per cent less than in July and August. The following shows average sale prices of bar iron, on which wages are based:

	1925	1924	1923	1922	1921
Jan-Feb.	2.05c	2.35c	2.25c	1.60c	2.80c
Mar.-April	2.05c	2.35c	2.35c	1.50c	2.35c
May-June	2.05c	2.25c	2.50c	1.60c	2.30c
July-Aug.	1.95c	2.15c	2.50c	1.70c	1.85c
Sept.-Oct.	.....	2.10c	3.40c	1.95c	1.70c
Nov.-Dec.	.....	2.05c	2.35c	2.20c	1.65c
Yearly av...	.....	2.21c	2.30c	1.76c	2.14c

Acquires Large Plumbing Ware Company

Pittsburgh, Sept. 1.—Under the terms of negotiations completed last Friday, a $3,000,000 plumbing wares manufacturing corporation of San Francisco, the Pacific Sanitary Mfg. Co., has been acquired by the Standard Sanitary Mfg. Co., according to announcement by President Theodore Ahrens of the latter company.

Plants of the Pacific Coast concern, said to be the largest manufacturers of plumbing goods in the West, will come under direct supervision of the Pittsburgh offices of the purchasing corporation. A $5,000,000 plant recently was completed by the Standard company in Baltimore, and a large factory was added to the Louisville plant last year. Extensive improvements have been made at the company's potteries at Tiffin, O., and Kokomo, Ind., and warehouses have been built at Boston and San Francisco.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

HISTORIC India House at 1 Hanover Square, New York, was threatened by fire Aug. 24 and was only extinguished after it had extended to the first floor. Valuable paintings and relics covering the three floors of the building were not damaged. India House, of which James A. Farrell of the United States Steel Corp. is president, numbers among its members many of the leading industrial and merchant figures of the country.

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THE GENERAL RAILWAY SIGNAL CO. has received contracts for automatic signal equipment from two railroads, the Southern railway for complete equipment from Morristown, Tenn., to Asheville, N. C., and the Baltimore & Ohio in connection with its Staten Island lines electrification.

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THREE huge nuts, each weighing 1460 pounds, are being made by the Bethlehem Steel Co. for the propeller shafts of the steamship MALOLO, which is to be put in operation between San Francisco and Honolulu by the Matson Navigation Co. The size of the nuts will necessitate handling by means of a specially forged wrench.

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DENNISON ALLOY & STEEL CASTING CO., Dennison, O., has bought the patent rights and holdings of the Martin Tractor Shovel Co., Greensburg, Pa., and has equipped its plant to manufacture the tractor shovel. Operations will be started within 60 days. D. S. Jones is manager.

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CONTROL of the Hercules Corp., Evansville, Ind., manufacturing automobile bodies and engines and refrigerating machines, is being acquired by the Serv-el Corp., also of Evansville, and a manufacturer of refrigerating machinery. The Hercules Corp. has been a subsidiary of Sears, Roebuck & Co., Chicago, and a substantial interest in the Serv-el Corp. is being acquired by the company.

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DICKERSON STEEL CO., Dayton, O., has bought a 1-story building with 25,000 square feet floor space, part of the idle Davis plant, which will be used as a warehouse for distribution of airplane steel, in which the company specializes, and other special steels. A. V. Dickerson is president and L. S. Jacobson secretary of the company.

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FRANK FLYN and all department heads and foremen of the strip steel mill of the Weirton Steel Co., Weirton, W. Va., were guests of J. C. Williams, vice president and general manager of the company at a banquet Aug. 22 at Fort Steuben hotel. The occasion was the establishment of a new tonnage record at the strip mill in July. Guests numbered 35 at the banquet.

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COMPLETION of plans for consolidation of four optical companies under the name of the Continental Optical Corp. is reported. The companies involved are the One Piece Bifocal Lens Co., Indianapolis, the New Jersey Optical Co., Newark, N. J., the Simpson Walther Lens Co., Rochester, N. Y., and the C. G. Aldrich Co., Somerville, Mass. The company will manufacture a complete line of lenses and spectacle frames and cases.

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THE CHICAGO NIPPLE MFG. CO., 1966 Southport avenue, Chicago, has purchased the Cenco Mfg. Co., 18 West Kinzie street, Chicago, manufacturer of pressed steel floor and ceiling plates, perforated hanger bars and similar products. Operations of the Cenco company will be transferred to the present plant of the purchaser, and a year hence the Chicago Nipple plant may be enlarged. C. Erwin Norman is in charge of this branch.

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ORGANIZATION of the Twin Device Mfg. Co., LaCrosse, Wis., has been completed to manufacture and market automobile specialties, including a new type of combined supercharger and air cleaner for internal combustion engines of the multiple cylinder, high speed class. A contract has been made with the Bump Paper Fastener Co. of LaCrosse, making a number of mechanical specialties, to manufacture the devices for the present, but later a factory will be built and equipped. E. S. Fiedler, 925 South Third street, LaCrosse, is the inventor of the device and president of the company.

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CONSTRUCTION work has been started by the Twin Disc Clutch Co., Racine, Wis., on the first unit of its plant at Fifteenth and Clark streets, 80 x 250 feet, and so arranged that six to eight units of equal size may be added as demands require. The concern will manufacture a new type of steel plate clutch for gas engine transmissions. Further building operations will be started early next spring.

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MONROE AUTO EQUIPMENT MFG. CO., Monroe, Mich., has enlarged its capacity to meet demands for its products. An additional wing 60 x 100 feet has been built for machine shop use, to increase production of tire pumps and manifold heaters for several types of automobiles. The foundry has been enlarged by an addition 100 x 150 feet, principally for aluminum casting. The new buildings are nearing completion.

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U S. REDUCTION CO., East Chicago. Ind., is having plans drawn for a chemical plant at East Chicago. Work is now under way on an addition, 80 x 175 feet, and a 2-story top addition, 60 x 75 feet, to one of its present buildings, which with equipment is costing $175,000. Capacity of the company for the production of pure and No. 12 aluminum is being increased 50 tons per day, or practically 50 per cent, according to L. Wenk, secretary-treasurer.

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FOR the accommodation of a new department recently established and now entering the production stage, manufacturing crude oil cracking stills, oil pipe line casing couplings, vessels for refineries, and other oil specialties, the A. O. Smith Corp., of Milwaukee, has broken ground for addition at Twenty-seventh street and Keefe avenue. The building will be 180 x 520 feet, one story. E. W. Burgess, structural engineer of the Smith corporation, is in general charge. Two large cranes and much other equipment will be installed. Equipment calls for much new welding machinery.

Construction and Enterprise

Concise and Timely Business Building Opportunities from the Field of Industry

ALHAMBRA, CALIF.—American Steel Pipe & Tank Co. has awarded a contract for a 1-story plant to the Union Iron Works, Los Angeles.

LOS ANGELES—Peerless Pump Co. has given a contract to the Union Iron Works for an addition 60x80 feet, which will be newly equipped.

LOS ANGELES—Southern California Iron & Steel Co. is making an extension to its bolt shop. A. C. Denman is president and general manager.

LOS ANGELES—Len H. Darling Co., Addison, Mich., manufacturer of storage battery separator plates, has bought a manufacturing site on South Grammercy street near Slauson avenue, 60x265 feet, on which a plant will be built.

SAN FRANCISCO—Standard Sanitary Mfg. Co., 1000 Bryant street, is having plans prepared for a plant to manufacture plumbing goods.

BRIDGEPORT, CONN.—Bridgeport Casting Co., North Street, is having plans made for a 1-story addition.

BRIDGEPORT, CONN.—Bridgeport Brass Co .has bought the plant and business of the Keating Valve Co., 32 Taylor street, Hartford, Conn., and will operate it as part of its own organization. The works may be removed later to Bridgeport.

HARTFORD, CONN.—Builders Steel Co., Windsor street, has let a contract for a 1-story fabricating shop 50x61 feet and a power house. Mylchreesy & Reynolds, 238 Palm street, are engineers.

HARTFORD, CONN.—Hart Mfg. Co., Hamilton street, manufacturer of electrical equipment, will build a 1-story addition 50x82 feet, for use as a plating department. J. G. Stone, 57 Mountford street, is the general contractor.

WATERBURY, CONN.—Waterbury Steel Ball Co., Gear and Aurora streets, will build a 1-story motor house.

DOVER, DEL.—Gibraltar Mfg. Co. has been incorporated with $100,000 capital to manufacture tools and other steel and iron products.

HAINES CITY, FLA.—Skinner Machinery Co., manufacturer of packing house equipment, has acquired a site and will remove its plant from Dunedin, Fla.

JACKSONVILLE, FLA.—C. L. Capps Co., 1224 East Adams street, is having plans made for a plant, including a brass and gray iron foundry department.

ST. AUGUSTINE, FLA.—Florida East Coast railroad, 120 Broadway, New York, W. G. Brown, St. Augustine, chief engineer, will build large railroad shops here. Battey & Kipp, Inc., 123 West Washington street, Chicago, are engineers.

CHICAGO—American Iron Wire Co., 1622 Carroll avenue, is building a 2-story addition, 35 x 150 feet. Harry E. Stevens & Co., 4022 West Madison street, is architect.

CHICAGO—Crown Mfg. Co. is building a 3-story factory 56 x 100 feet, on Newberry avenue. Dubin & Eisenberg, 14 West Washington street, are architects.

CHICAGO—A. Finkl & Sons Co., 1326 Cortland street, is having sketches made for a machine shop of brick and steel, 100 x 200 feet. Probably build in 1926.

Where additional information is presented, reference is made to date of issue in which previous item appeared.

CHICAGO—A. F. Anderson Iron Works, A. F. Anderson president, 5844 Loomis street, is building a 1-story plant 128 x 222 feet. Ralph C. Harris, 190 North State street, is architect.

CHICAGO—Grand Metal Spinning Co., 433 South Western avenue, has been incorporated with $10,000 capital to manufacture metal devices by Abraham Seagel, Thomas W. Scully and Sophie Seagel.

CHICAGO. — The Studebaker Sales Co., 2036 South Michigan avenue, is erecting a service and sales station with usual service equipment at Lawrence and Avers avenue, to cost $150,000.

CHICAGO—Window Spring Co., 76 West Monroe street, has been incorporated to manufacture window devices to replace sash weights by H. O. Troendly, W. E. Guest, and Irwin T. Gilruth.

CHICAGO—Weidenmiller Die Mfg. Co., 4311 Lincoln avenue, has been incorporated with $5000 capital by Emil O. Weidenmiller, Edward A. Weidenmiller and John A. Peterson. John Peterson, 10 South LaSalle street, is correspondent.

CHICAGO. — Plans have been drawn by the Chicago Nipple Mfg. Co., 1966 Southport avenue, recent purchaser of the Cenco Mfg. Co., for a plant addition, but this enlargement probably will not mature for a year.

CHICAGO—Royal Steel Co., 39 South La Salle street, has been incorporated to manufacture articles of steel and iron by John C. Wahl, Roy C. Knoll and Marcel E. Day. Miller, Gorham, Wales & Noxon, 1017 New York Life building, are correspondents.

CHICAGO—Sani Machine Corp., 326 West Madison street, has been incorporated with $50,000 capital to manufacture meat and food cutting machines by Otto M. Wermich, Paul E. Madden and Alexander J. Ross. D. J. Rosa, 626 Waveland avenue, is correspondent.

CHICAGO—Portland Cement association, W. M. Kenney secretary and manager, will build a 5-story administration building and testing laboratory at Dearborn street and Grand avenue. Holabird & Roche, 104 South Michigan avenue, are engineers.

CHICAGO—Chicago Tank Car Co., 80 East Jackson boulevard, has been incorporated with $100,000 capital to manufacture tank cars by Gaylord L. Weaver, John J. Sherlock, and M. C. Putnam. John J. Sherlock, 1104 Fisher building, is correspondent.

CHICAGO—Illinois Road Marking Co., 1424 Lunt avenue, has been incorporated with $2000 capital to manufacture machines for marking streets and highway and other devices by Ira D. Perry, Geroge N. Welsh and Leo M. Tarpey. George N. Welsh, 38 South Dearborn street, is correspondent.

CHICAGO—Wridell Nobach Co., 12 South Clinton street, has been incorporated to manufacture wood and metal patterns and do general machine work by W. J. Nobach, J. T. Hume, E. A. Nobach and F. O. Wridell. William E. Williams, 332 South LaSalle street, is correspondent.

CHICAGO—United States Fire Escape Co., 2325 South Western avenue, has been incorporated with 10 shares no par value to build fire escapes and emergency exits by F. R. McMaster, E. R. Landon and Clare Landon. Howard Ames, 1721 Chicago Temple building, is correspondent.

CHICAGO. — Wallace Iron & Metal Co. 6100 South LaSalle street, has been incorporated with $20,000 capital to manufacture and prepare metals, iron and steel and other materials by Samuel Krisolofsky, Robert R. Simon and George D. Mills. Epstein & Feiwell, 11 South LaSalle street, are correspondents.

CHICAGO—Chicago Steel Service Co., 38 South Dearborn street, has been incorporated with $40,000 capital to deal in steel and metal products by Ella L. Router, M. C. Walsh and Harry E. Neeren. Tinsman & Blocki, 1355 First National bank building, are attorneys.

CHICAGO—Superior Metal Bed Co., 51 West Thirty-eighth street, has been incorporated with $24,000 capital to manufacture metal beds, furniture and fixtures by Joseph W. Berenson, Joseph H. Gross, and Joe Hurwitz. Fischel & Kahn, 111 West Monroe street, is correspondent.

CHICAGO—Premier Adding Machine Corp., 122 South Michigan avenue, has been incorporated with $100,000 capital to manufacture adding and computing machines by John L. McInerney, Anna Hitney and Jean Kron. John L. McInerney, 139 North Clark street, is correspondent.

DECATUR, ILL.—Wabash railroad, I. Marshall Decatur, division engineer, will build a 1-story machine shop, 60 x 120 feet.

EAST MOLINE, ILL.—Standard Calorimeter

(*Continued on Page* 608)

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. works

Pennsylvania, No. 1	$43.00 to 46.00
Pennsylvania, No. 2	35.00 to 40.00
Ohio, No. 1	43.00 to 46.00
Ohio, No. 2	38.00 to 40.00
Illinois, No. 1	40.00 to 43.00
Illinois, No. 2	36.00 to 40.00
Kentucky, No. 1	43.00 to 45.00
Kentucky, No. 2	40.00 to 43.00
Missouri, No. 1	41.00 to 43.00
Missouri, No. 2	35.00 to 38.00
Maryland, No. 1	43.00 to 47.00
Maryland, No. 2	39.00 to 42.00

SILICA BRICK

Pennsylvania	$40.00
Chicago	49.00
Birmingham	48.00 to 52.00

MAGNESITE BRICK

Per Net Ton Seaboard Base

9 x 4½ x 2½	$65.00

CHROME BRICK

(Per Net Ton)

9 x 4½ x 2½	$48.00

Larger Steel Buying From Stock

Fall Needs Bring Larger Orders—Mill Delivery Slowness Aids

BUYING of steel products from store seems to be feeling the influence of the approaching fall season, needs for building to finish before cold weather apparently bringing some business. Some mills are not able to give as good delivery as formerly and this has turned buyers to warehouse stocks. In practically all centers trade is better in the past week than in the period immediately preceding.

Cleveland jobbers are well satisfied with stability of prices and demand. Prices are unchanged but orders received total an increase over the past week and over the same period of Aug., 1924. Sheets and bars are most active. The number of orders taken seems to be expanding, one warehouse reporting a 25 per cent increase over the previous week's figure of total bookings.

Warehouse demand has undergone a further reaction in the New York metropolitan district during the past week, the situation being spotty. Business has tapered off for the past two weeks, following a month and a half of brisk trading. Prices are unchanged.

Warehouse demand in St. Louis has been better than usual at this time of the year, principally in structurals. Orders from the Midcontinent oil fields have fallen off considerably, while a marked improvement has been shown in the coal fields of Southern Illinois.

Demand for steel from store at Pittsburgh is largely for hot mill products and slight call for cold-finished bars. Prices are holding firmly and with mills unable longer to make overnight deliveries demand on warehouse is expected to increase.

Buffalo iron and steel warehouses report August sales up to the level of those of July and considerably in excess of those of the corresponding period of 1924. Sheet demand is notably improved and reinforcing bars are moving more freely. Bar sales are confined to small lots but orders are fairly numerous. Prices are steady and unchanged.

August business in the Chicago district was fair but the heaviest of any month so far this year. Prices generally are unchanged.

Quotations at Cents Per Pound at Leading Market Centers

STEEL BARS

Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.10c
Detroit	3.15c
Los Angeles	3.15c
New York	3.24c
Philadelphia	3.20c
Pittsburgh	2.90c
Portland	2.85c
San Francisco	3.30c
Seattle	3.25c
St. Louis	3.15c
St. Paul	3.25c

IRON BARS

Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.15c
New York	3.24c
Philadelphia	3.20c
St. Louis	3.25c

REINFORCING BARS

Boston	3.265c to 3.50c
Buffalo	3.30c
Chicago	2.60c
Cincinnati	3.30c
Cleveland	2.85c to 3.10c
Detroit	3.15c
Los Angeles, C. L.	3.05c
Los Angeles, L. C. L.	3.30c
New York	2.95c to 3.15c
Philadelphia	2.90c to 3.20c
Pittsburgh	2.10c to 2.60c
San Francisco, C. L.	3.35c
San Francisco, L. C. L	3.80c
Seattle	3.50c

STANDARD STRUCTURAL SHAPES

Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.20c
Detroit	3.25c
Los Angeles	3.15c
New York	3.34c
Philadelphia	2.80c to 3.20c
Pittsburgh	3.00c
Portland	2.85c
San Francisco	3.30c
Seattle	3.35c
St. Louis	3.25c
St. Paul	3.35c

PLATES

Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼-inch and thicker	3.20c
Cleveland, 3/16-inch	3.425c
Detroit	3.25c
Detroit, 3/16-inch	3.45c
Los Angeles	3.15c
New York	3.34c
Philadelphia	2.80c to 3.20c
Philadelphia, 3/16-inch	3.00c t o3.40c
Pittsburgh	3.00c
Portland	3.25c
San Francisco	3.30c
Seattle	3.25c
St. Louis	3.25c
St. Paul	3.35c

NO. 10 BLUE ANNEALED SHEETS

Boston, 3/16-inch	3.915c
Buffalo	3.80c
Chicago	3.50c
Cincinnati	3.60c
Cleveland	3.10c
Detroit	3.75c
Los Angeles	3.70c
New York	3.89c
Philadelphia	3.75c
Portland	4.25c
San Francisco	3.70c
Seattle	4.25c
St. Louis	3.60c
St. Paul	3.75c

NO. 28 BLACK SHEETS

Boston	4.95c
Buffalo	4.40c
Chicago	4.00c
Cincinnati	4.55c
Cleveland	3.90c
Detroit	4.40c
Los Angeles	4.65c
New York	3.90c to 4.35c
Philadelphia	4.35c
Portland	5.25c
San Francisco	4.65c
Seattle	5.25c
St. Louis	4.50c
St. Paul	4.25c

NO. 28 GALVANIZED SHEETS

Boston	6.00c
Buffalo	5.45c
Chicago	5.00c
Cincinnati	5.65c
Cleveland	5.10c
Detroit	5.50c
Los Angeles (corr. 26 ga.)	5.75c
New York	4.85c to 5.25c
Philadelphia	5.45c
Portland	5.75c
San Francisco	5.75c
Seattle	6.25c
St. Louis	5.50c
St. Paul	5.25c

BANDS

Boston	4.015c
Buffalo	4.05c
Chicago	3.65c
Cincinnati	3.95c
Cleveland	3.85c
Detroit	3.80c
Los Angeles	4.25c
New York	3.99c
Philadelphia	3.90c
Pittsburgh	3.60c
Portland	4.25c
San Francisco	4.15c
Seattle	4.25c
St. Paul	3.90c

HOOPS

Boston	5.50c
Buffalo	4.95c
Chicago	4.15c
Cleveland	3.85c
Detroit	4.30c
New York	4.49c
Philadelphia	4.25c
Pittsburgh	3.60c
Seattle	5.00c
St. Paul	4.40c

COLD FINISHED STEEL

	Rounds and hexagons	Flats and squares
Boston	3.95c	4.45c
Buffalo	3.95c	4.45c
Chicago	3.60c	4.10c
Cincinnati	3.85c	4.35c
Cleveland	3.80c	4.30c
Detroit	3.90c	4.40c
Los Angeles	5.25c*	.....
New York	4.00c	4.50c
Philadelphia	4.00c	4.50c
Pittsburgh	3.60c	4.10c
Portland	5.00c*	.....
San Francisco	5.25c*	.....
Seattle	4.75c*	.....
St. Paul	4.05c*	.....

*Rounds only.

COLD ROLLED STRIP

Boston, .100 inch, 500 lb. lots	6.15c
Buffalo	6.65c
Chicago	7.15c
Cincinnati	7.15c
Cleveland, over 500 pound lots	5.95c
Detroit	6.30c
New York	6.10c
Philadelphia	6.10c
Pittsburgh	6.30c

FOREIGN IRON AND STEEL
New York, duty paid

Swedish hollow drill steel	15.00c
Swedish iron bars round	6.75c
Flats and squares	7.00c

WELDED PIPE
Discounts from warehouse, New York City
Standard Steel Pipe
WROUGHT STEEL PIPE

	Black	Galvanized
⅛-inch butt	—23	+21
¼ to ⅜-inch butt	—36	— 3
½-inch butt	—46	—29
¾-inch butt	—51	—37
1 to 3-inch butt	—53	—39
2-inch lap	—40	—22
2½ to 6 inch lap	—48	—35
7 and 8-inch lap	—44	—17
9 and 10-inch lap	—38	—14
11 and 12-inch lap	—37	—12

WROUGHT IRON PIPE

	Black	Galvanized
¼ to ⅜-inch butt	+44%	+78%
½-inch butt	— 4	+19
¾-inch butt	—11	+ 9
1 to 1½-inch butt	—14	+ 6
2-inch lap	— 5	+14
2½-inch lap	— 9	+ 9
3 to 6-inch lap	—11	+ 6
7 to 12-inch lap	— 3	+16

Industrial Business Changes

MARLIN-ROCKWELL Corp. has bought the plant and goodwill of the Strom Ball Bearing Mfg. Co., 4527 Palmer street, Chicago. The buyer announces the business will be conducted as heretofore, under direction of the same department heads and there will be no change in policy. The same product will be turned out.

* * *

Michigan Crown Fender Co., Ypsilanti, Mich., has disposed of its plant and business to the United Stove Co.

* * *

Miamus Diesel Engine Co., New York, has moved its sales office at Los Angeles to 324 East Third street.

* * *

Cincinnati Shaper Co., Cincinnati, has appointed Neff, Kohnbusch & Bissell, 1045 West Washington boulevard, Chicago, sales agents for its line of press brakes.

* * *

Cincinnati Enameling Co., Elmore and Miller streets, Cincinnati, has sold its plant and business to the Porcelain Enamel & Mfg. Co., Baltimore, Md.

* * *

Pittsburgh Valve Foundry & Construction Co., Pittsburgh, has appointed A. G. Hill, 45 Jarvis street, Toronto, Ont., its agent for Eastern Canada.

* * *

Gibb Welding Machines Co., Bay City, Mich., has appointed Arthur Jackson, 32 Glenholme avenue, Toronto, its sales agent for eastern Canada.

* * *

Machinists Supply Co., Pittsburgh, has been appointed distributor in the Pittsburgh district for the complete line of chucks produced by the Union Mfg. Co., New Britain, Conn.

* * *

The Lindberg Steel Treating Co., which has been at 413 North Carpenter street, Chicago, has moved into new, fireproof quarters, 50 x 125 feet, at 221-23 Union Park boulevard, Chicago.

* * *

Cornell Iron Works, manufacturer of steel shutters and doors, has removed its main office to 71 Marion street, Long Island City, N. Y., retaining a branch office at 601 West Twenty-sixth street, New York.

* * *

Hyman-Michaels Co., Chicago, dealers in iron and steel scrap and relaying rails, has opened an office at 817 Magnolia building, Dallas, Tex., in charge of J. R. Cramdall, formerly in the St. Louis office.

* * *

H. S. Getty & Co. Inc., announce the removal of their offices and plant from 1539 Cabot street and 1415 Germantown avenue to its new daylight building at Tenth and Thayer streets, Philadelphia.

EFFECTIVE Sept. 1, the Washington office of IRON TRADE REVIEW and the Penton Publishing Co. will be moved to 401 Westory building, where larger and more satisfactory quarters have been secured.

where facilities will be much improved.

* * *

The Sinko Tool & Mfg. Co., doing a general stamping, tool and die business, has moved from Halsted and North avenues, Chicago, into its new plant, 100 x 125 feet, at 351-59 North Crawford avenue, Chicago. J. Sinko is president.

* * *

Cincinnati Shaper Co. and the Cincinnati Gear Cutting Machine Co. have appointed the Huey & Philp Hardware Co., Dallas, Tex., and Woodward, Wright & Co., Ltd., New Orleans, exclusive sales representatives in their respective territories.

* * *

National Novelty Co., Minneapolis, has removed to its new factory and office building at 3408 East Lake street, where greater facilities are available for the production of its line of weighing and vending machines and metal specialties.

* * *

S. W. Platt & Co., operating an iron and steel scrap yard at McKees Rocks, Pa., on the Pittsburgh & Lake Erie railroad, has established an office at 708-709 Oliver building, Pittsburgh. Before removing its office to McKees Rocks this company maintained Pittsburgh offices in the First National bank building.

* * *

L. A. Young Industries, Inc., Detroit, has absorbed the spring division of the Ideal Fence & Spring Co. of Canada Ltd., of which Walter L. McGregor, Windsor, Ont., is president and general manager, and the Leggett & Platt Spring & Bed Co., Windsor. The three will be operated as a single concern, giving a wide assortment of output.

* * *

Amendments to the corporate articles of the M. E. M. Mfg. Co., Milwaukee, change the style to Red E. Mfg. Co., conforming to the trademark of its principal products, which include automobile and tractor units and parts, gas engine specialties, etc. The capital stock has been increased from $75,000 to $125,000 to provide for future expansion.

* * *

Percy M. Brotherhood, formerly first vice president of Manning, Maxwell & Moore Inc., who as previously stated in IRON TRRADE REVIEW has opened offices at 25 Church street, New York City, specializing in machine tools and other equipment, will represent the Diamond Machine Co., Providence, R. I., manufacturer of grinding and polishing equipment and Bignall & Keller Co., Edwardsville, Ill., piping machinery.

* * *

American Cable Co., New York, has appointed the firm of Bruntons, Musselburgh, Scotland, to handle its general lines in that country. The Dominion Wire Rope Co., Montreal, has been appointed for Canada. Other new distributors are: Marion Machine, Foundry & Supply Co., Marion, Ind.; J. Shuman Hower, 106 Foster building, Utica, N. Y.; Contractors' Equipment Co., 8 Steuben street, Albany, N. Y.; and John C. Louis, 221 South Eutaw street, Baltimore.

Construction and Enterprise

(*Continued from Page* 605)

Co., 606 Twelfth avenue, has been incorporated with $100,000 capital to manufacture scientific instruments by Orlando J. Root, Samuel W. Parr and Anna J. Anderson. Kenworthy, Dietz, Shallberg, Harper & Sinnett, Peoples Bank building, Moline, are correspondents.

EDWARDSVILLE, ILL.—Kaiser, Merrell & Chowen, Inc., 104 Purcell street, has been incorporated with $4000 capital to manufacture oil burners, refrigerators and electric ice making machinery by Millard P. Kaiser, Spender Amerell and G. G. Chowen. Warnecke, Williamson & Burroughs, Edwardsville, are correspondents.

ELMHURST, ILL.—Protectu Corp. will build a 1-story plant, 85 x 126 feet, on which bids are being taken by A. Maiwurm, architect, 1100 North boulevard, Oak Park, Ill.

FREEPORT, ILL.—Modern Printing Plate Co., 18 West Exchange street, has been incorporated with $15,000 capital to manufacture electrotypes by Oscar Wagner, Gustav Schultz and Paul Wurtsel.

KEWANEE, ILL.—Kewanee Boiler Co., G. Dixon manager, will build an office addition two stories, 50 x 60 feet.

NEW MINDEN, ILL.—New Minden Lime Stone Co. has been incorporated with $25,000 capital to prepare limestone and its products by Henry Finke, August Vogt, and William Sachtleben. J. Paul Carter, Nashville, Ill., is correspondent.

STERLING, ILL.—Northwestern Barb Wire Co. will build a 2-story warehouse 80 x 140 feet. The Austin Co., 160 North LaSalle street, is engineer.

WHEATON, ILL.—Wheaton college, Charles A. Blanchard president, will build a boiler and power house, 60 x 80 feet, one story.

EVANSVILLE, IND.—Evansville Metal Bed Co. will build and equip a 1-story addition and make other improvements to increase production.

INDIANAPOLIS, IND.—Symons Bros. Co. is having plans made by Lamboy Co., 3005 Plankinton building, for a 1-story foundry and milling plant, 150x860 feet and 60x100 feet.

BOGALUSA, LA.—Rundell Grease Cup Co. has been incorporated to manufacture automobile specialties with $100,000 capital by H. J. Cowgill, president, and J. H. Slaughter.

BALTIMORE, MD.—Consolidated Gas, Electric & Power Co., Lexington building, will rebuild its machine shop burned two weeks ago.

BALTIMORE, MD.—Flynn & Emrich Co., Saratoga and Holliday streets, R. C. Stewart president, is having plans made for a 1-story foundry 100x260 feet. W. S. Austin, Maryland Trust building, is engineer.

GARDNER, MASS—The Gardner Carriage Gear Co. has been incorporated with $100,000 capital by Leo. E. Washer, Cora J. Washer, and Stephen E. King, all of Gardner.

LYNN, MASS.—Contract has been awarded for a steel and brick 1-story, 55x100-foot, forge shop building for the General Electric Co.

WORCESTER, MASS.—The Roda Photo Products Co. has been incorporated with $50,000 capital to manufacture timing and printing machinery by Robert Abrahamson, M. Davida Abrahamson, and James A. Moynihan of Worcester, Mass.

BATTLE CREEK, MICH.—H. B. Sherman Mfg. Co., H. C. Sherman president, Barney street, will build a brass foundry and finishing building one story, 114 x 197 feet.

DETROIT—Superior Steel Castings Co. will shortly begin erection of a 2-story addition 50x85 feet to be used as a foundry.

DETROIT—James Motor Valve Co., 1344 Maple street, manufacturer of automobile parts, is in the market for general machine equipment.

DETROIT—Kelsey Wheel Co., John Kelsey president and general manager, 3600 Military avenue, will build a 1-story shop, 112 x 146 feet.

DETROIT—Wayne Iron Works has been incorporated with $30,000 capital to manufacture iron and steel by Leslie A. Hopkins, Carl T. Hess and Waldo A. Goerke, 3787 Garland avenue.

DETROIT—Wolverine Tube Co., 1411 Central avenue, manufacturer of copper and brass tubing, C. C. Limbocker president, will build a 1-story addition 60x200 feet. Jones McNally Co. is the general contractor.

DETROIT—Detroit Suburban Gas Plant Co. has been incorporated with $25,000 capital to manufacture gasoline gas plants by A. W. Frantz, Toledo, O.; R. C. Bristol, 156 Tuxedo avenue, Highland Park, Mich., and L. A. Pratt, Detroit.

DURAND, MICH.—Simplicity Engineering Co. has been incorporated with $150,000 capital to manufacture screening material and devices by Lewis E. Soldan, George H. Behnke and Harry A. Thomas.

GRAND RAPIDS, MICH.—Superior Steel Castings Co. will build a 2-story addition 50 x 85 feet to increase its capacity.

LANSING, MICH.—Lindell Forge & Machine Co. is building a machine shop addition for which the foundation has been completed.

LANSING, MICH.—Federal Drop Forge Co. is adding to its equipment to increase production, installing recently a press, electric ovens and other machinery.

MUSKEGON, MICH.—West Michigan Steel Foundry is inquiring for a 2-stage air compressor, 500 cubic feet or more capacity and a 72-inch disk grinder with blower.

STURGIS, MICH.—Scoville Mfg. Co., Waterbury, Conn., which recently bought the plant of the Morency-Van Euren Mfg. Co., will make additions and install additional equipment for the production of metal devices.

YPSILANTI, MICH.—Michigan Crown Fender Co., L. T. Wilcox president, a newly formed company, will expand by establishing departments for the production of cookers and oil heaters.

JOPLIN, MO.—Wilhoit Refinery Co., Villa Heights, is having plans made for improvements to plant, including a pressure still of 1000-barrel daily capacity four 2000-barrel storage tanks and two 5000-barrel storage tanks and boilers.

KANSAS CITY, MO.—Columbian Steel Tank Co., West Twelfth street, A. A. Krämer president, has completed its first unit and will proceed at once with construction of the second.

KANSAS CITY, MO.—Baird Road Machinery Co. Inc. has been incorporated with $10,000 capital to manufacture farm and highway machinery by D. S. Baird, 629 West Sixty-third street, and others.

KANSAS CITY, MO.—Talbot-Flood Mfg. Co. has been incorporated with $20,000 capital to manufacture machines for mixing mortar by O. C. Talbot, 5930 Central street, and others.

KANSAS CITY, MO.—Missouri Hydro-Electric Co. is having plans made by Burns & McDonnell, Engineering Co., Interstate building, Kansas City, for a generating plant near Bagnell, Mo., to develop 100,000 horse power.

ST. LOUIS—St. Louis Car Co. will rebuild the portion of its plant recently burned.

ST. LOUIS—Chandeysson Electric Co., 4092 Bingham avenue, is building a plant 50x120 feet.

ST. LOUIS—Union Electric Light & Power Co. has plans in preparation for addition of a turbo-generator and accessory equipment in its plant at Cape Girardeau, Mo.

ST. LOUIS—Schroeder & Curry Inc. has

Iron and Manganese Ores and Minerals

Iron Ore

LAKE SUPERIOR ORES

Per Gross Ton Lower Lake Ports

Old range bessemer, 51½ per cent iron	$4.55
Mesabi bessemer, 51½ per cent iron	4.40
Old Range nonbessemer, 51½ per cent iron	4.40
Mesabi nonbessemer, 51½ per cent iron	4.25

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic 53 to 63 per cent	9.00 to 10.00
Copper free low phosphorus 53 to 65 per cent	nominal

FOREIGN IRON ORE

Cents per unit, f.o.b. cars Atlantic ports

Spanish low phosphorus, 52 to 54 per cent	9.00 to 10.00
Algerian low phosphorus, 52 to 54 per cent	9.00 to 10.00
Riff low phosphorus, 65 to 66 per cent	9.50 to 10.00
Swedish and Norwegian low phosphorus, 68 per cent	11.00 to 11.50
Swedish foundry or basic, 66 to 68 per cent	9.00 to 10.00
Spanish foundry or basic, 50 to 54 per cent	8.50 to 9.00
Algerian foundry and basic, 50 to 54 per cent	8.50 to 9.00

Manganese Ore

Prices do not include duty at rate of 1 cent per pound of metallic manganese contained.

Brazilian, minimum 47 per cent.	nominal
Indian, minimum 47 per cent.	nominal
Caucasian, 53 to 55 per cent.	
—Washed, 43 to 45 cents c.i.f. tidewater	

Fluor Spar

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton	$16.00
Washed gravel, imported duty paid eastern tidewater, per net ton	15.50 to 18.00

been incorporated with $100,000 capital to manufacture oil burners by William F. Schroeder, 2300 Newhouse street.

ST. LOUIS—Columbia Iron Works, Inc., has been incorporated with $10,000 by Raymond Edward La Driere, Boatmens Bank building, and others.

ST. LOUIS—Famous Mfg. Co. has been incorporated to manufacture oil burners with $100,000 capital by A. J. Stumberg, 3630 Keokuk street.

BELLEVILLE, N. J.—Belleville Mfg. Corp. been incorporated to manufacture chemical and rubber goods with 1250 shares no par value by Ida Y. Turck, Barbara Leebel, Frederick G. Turck and Charles W. Leebel. John B. Brown, Newark, is attorney.

BELLEVILLE, N. J.—Federal Brass Foundry has been incorporated with $100,000 is preferred stock and 250 shares common no par value by Peter P. Neilsen, William J. Brown, of Belleville and Gustave Stadeler of Newark. John B. Brown, Newark, is attorney.

NEWARK, N. J. — Baker & Co. Inc., 54 Austin street, will build a 1-story metals refining plant, 50x113 feet, 444 New Jersey Railroad avenue.

NEWARK, N. J.—The Avon Sheet Metal Works has purchased property at 361-367 Jelliff avenue, for the erection of a plant for the manufacture of cornices. Abraham Kolter is proprietor.

NEWARK, N. J.—Arrow Machine Co. has been incorporated with $25,000 capital to manufacture machinery by Anthony B. King, Bloomfield; Henry C. Rodemann and Perry E. Belfatto, Newark. Dalrymple & Campbell, Newark, are attorneys.

NEWARK, N. J.—Home Appliance Co. has been incorporated with $20,000 preferred stock and 200 shares common no par value to manufacture household appliances by Bruce V. Edwards, East Orange; J. M. Hause, Newark and George C. Winne, Arlington. George C. Winne, New York, is attorney.

TEANECK, N. J. — Industrial Products Mfg. Co. has been incorporated with $10,000 capital by Kenneth G. Morton, West New Brighton, S. I.; Joseph Beck, Brooklyn; William F. Hughes, New York.

TRENTON, N. J.—A $2,000,000 sub-station will be erected here by the Public Service Electric & Gas Co., Newark, N. J.

BROOKLYN, N. Y.—Intertype Corp., 50 Court street, is planning to build a plant at Harrison, N. Y. The Ballinger Co., 100 East Forty-second street, New York, is engineer.

BROOKLYN—H. & G. Iron Works has been incorporated with $10,000 capital by W. and R. Schulman and C. Eusenstein. H. Markowitz, 116 Nassau street, is attorney.

BROOKLYN. — Lobley Machine Works has been incorporated with 200 shares no par value by M. E. Lobley, E. G. Lobley, and T. Lobley Jr. Cohen, Cole & Weiss, 61 Broadway, are attorneys.

BROOKLYN—Egale Metallic Bed Corp. has been incorporated with $15,000 capital by N. M. Weissman, H. Kraft and S. Weinrob. J. F. Finkelstein, 154 Nassau street, is attorney.

BUFFALO, N. Y. — Fetter Steel Barrel Corp. has been incorporated with 670 shares at $100 each, 680 class A and 1720 class B. common, no par value by D. H. Stoll, A. G. Bartholomew and R. S. Fetter. W. R. Daniels, Buffalo, is attorney.

NEW YORK. — Aram Lighting Fixture Co. has been incorporated with $10,000 capital by S. Goldstein, J. Fingerhut and H. Zackim. L. Rodd, 38 Park Row, is attorney.

NEW YORK.—Fairchild Airplane Mfg. Corp. has been incorporated with 200 shares common stock no par value by S. M. Fairchild, F. N. Kondolf and E. Robinson. J. Paull, 120 Broadway, is attorney.

NEW YORK—G. M. Bennett Metal Corp. has been incorporated with $10,000 capital to manufacture printers supplies by E. M. Kent, H. M. Lindsey and A. Zeitler. W. A. Defada, 119 West Fortieth street, is attorney.

NEW YORK—Selbec has been incorporated with 100 shares common stock no par value to manufacture papermaking machinery by J. S. Quinn, A. T. Burruoghs and A. J. Arbuckle. H. Goldman, 120 Broadway, is attorney.

BROOKLYN—The E. W. Bliss Co. has sold its 115x200-foot foundry on Plymouth street, between J and Bridge streets, to the Brillo Mfg. Co., manufacturers of aluminum cleansers and steel wool, who will make the necessary alterations for its production.

NEW YORK. — Creamery Equipment Corp. has been incorporated with 1000 shares no par value by W. Kennedy, F. C. Delaney and J. Tark. Compton & Delaney, 501 Fifth avenue, is attorney.

NEW YORK—Plans are being completed by Raymond Hood, 18 East Forty-first street, architect, for a 2-story, 100x120-foot plant and distributing works in Brooklyn, for the Crane Co., manufacturer of plumbing equipment. The cost is estimated at $80,000.

BUFFALO, N. Y.—Buffalo Wire Works Co., 316 Terrace street, is in the market for equipment for a new plant for wire products.

BUFFALO—American Brass Co., 446 Military road, is having plans made for anickel plating plant.

JAMESTOWN, N. Y.—A new factory building will be erected here for the Jamestown Car Parts Co., the contract having recently been let.

JAMESTOWN, N. Y.—Precision Mfg. Co., Ralph McBuck president, manufacturer of tools, gages and similar devices will establish a plant at Sherman, N. Y., in a building provided by the city, which the company will equip.

LONG ISLAND CITY, N. Y.—The Roman-Callman Co., has sold its 200x300-foot plot in the Degnon property of this city, to a company who will start work at once on the erection of a plant for its own occupancy.

NEW YORK—F. N. DuBois Co., manufacturer of plumbing supplies, will build two additions, 90x160 feet and 50x100 feet, at its plant at Newark, N. J. The Austin Co., 120 Broadway, New York, is engineer.

ROCHESTER, N. Y.—Rochester Gas & Electric Corp., J. P. Hartfenkamp, general superintendent, 34 Clinton avenue North, will build a coke cooling plant. J. G. White Engineering Corp., 43 Exchange place, New York, is engineer.

SCHENECTADY, N. Y.—Work will be started shortly by the General Electric Co. on a 1-story, 55 x 100-foot forge shop at its plant in Lynn, Mass.

AKRON, O. — Akron Specialty Mfg. Co. has been incorporated with $500 capital by H. K. Raymond, H. E. Dixon, R. W. Raymond, S. M. Jett and G. T. Kilmon.

ALLIANCE, O.—Alliance Steel Products Co. has been incorporated with $5000 capital by Percy S. Bottomley, E. Homer Kendall, Lester R. Ruth Frank W. Wheat and F. W. Andrews.

ASHLAND, O.—F. Myers & Bro. Co., P. A. Myers president, is having plans made for a 5-story plant 70x180 feet for the manufacture of pumps and gears.

ASHLAND, O.—F. E. Myers & Bro. Co., manufacturer of pumps, will build a 5-story plant for a brass foundry and manufacturing departments. Lockwood, Greene & Co. are engineers.

CLEVELAND—Draper Mfg. Co., manufacturer of steel barrels, will build an addition 100x111 feet at 8600 Crane avenue.

CLEVELAND—Aurora Electrical Mfg. Co. has been incorporated with $20,000 capital by Winfield Worline, R. H. Dawson, R. R. Moffett, M. C. Hensch and Irene Karabinus.

CLEVELAND. — An addition to the municipal electric lighting plant will be built at East Fifty-third street by the city of Cleveland. Howell Wright is director of public utilities.

CHESTER, PA.—Delaware River Steel Co. is having plans prepared for additions that will practically double its plant.

CORRY, PA.—Ajax Iron Works is asking prices on an electric traveling crane and runway.

LATROBE, PA.—Latrobe Electric Steel Co. will build a 1-story addition 60x400 feet, for which an electric traveling crane is required.

PHILADELPHIA—Keenan Supply Co., 2849

Machinery Exports in July

	July		Seven months ended July	
	1925	1924	1925	1924
Lathes, number	118	96	889	407
Boring and drilling machines, number	138	579	891	1,569
Planers, shapers and slotters, number	22	23	201	151
Bending and power presses, number	46	27	222	173
Gear cutters, number	29	110	291	363
Milling machines, number	88	25	568	230
Thread cutting and screw machines, number	57	123	499	428
Punching and shearing machines, number	24	13	124	116
Power hammers, number	31	19	156	135
Rolling machines, number	.....	.....	.....	.....
External grinding machines, number	87	354	985	2,009
Internal grinding machines, number	30	24	179	380
Other sharpening and grinding machines lbs.	164,198	182,724	952,878	736,409
Chucks for machine tools, number	2,834	335	15,958	14,519
Reamers, cutters, drills and other metalworking tools, lbs.	494,404	123,211	2,008,801	1,157,673
Pneumatic portable tools, number	1,618	827	9,451	8,119
Air compressors, number	.....	376	.....	3,484
Cranes				
With swinging booms, number	6	14	47	87
Other cranes, number	19	11	110	122
Hoists and derricks, except mining, number	599	455	3,654	2,695
Ball and roller bearing and parts of chains, lbs.	233,266	178,963	1,123,624	1,666,454
Sprocket and power transmission, lbs.	225,670	312,466	1,815,668	2,331,711
Other chains, pounds	821,205	767,423	7,529,639	5,984,771

Germantown avenue, manufacturer of plumbing supplies and equipment, will build an addition to its plant.

PHILADELPHIA—M. F. Wilfong Iron Works, J. R. Wilfong president, is having plans drawn for rebuilding its burned foundry plant.

PHILADELPHIA. — Pennsylvania Railroad Co., E. P. Temple assistant chief engineer, Broad street station, Philadelphia, will build an office building at Thirtieth and Market streets, 14 stories, 150x250 feet.

PHILADELPHIA—Bids will be taken shortly by I. Halpern Bros. & Co., 1333 North Front street, manufacturers of metal products, for a 1-story, 75x150-foot addition at Erie avenue and Corbin street.

PHILADELPHIA—Contract for the erection of a $200,000 warehouse for the Industrial Realty Corp. at the Northeast corner of Front and Venango, has been awarded to Barclay White & Co., 1713 Sansom street. The Ballinger Co. is architect in charge.

PHILADELPHIA—Plans have been completed by the department of wharves, docks and ferries for the construction of a railroad freight storage yard on the Delaware river front, below McKean street, on which bids will be asked probably this fall.

PROVIDENCE, R. I.—Approximately $300,000 will be spent by the Providence Gas Co., on a group of buildings, including a 3-story, 85 x 220-foot service building, a 1-story, 85 x 290-foot garage, and a 50 x 80-foot boiler house.

CHESTER, S. C.—Baldwin Tool Works, Parkersburg, W. Va., will construct and equip a plant here. L. E. Wilson, 1711 Spring street, Parkersburg, is in charge.

MEMPHIS, TENN. — Standard Sanitary Mfg. Co., Pittsburgh, will build a branch plant here to care for distribution in the South.

GALVESTON, TEX.—Steam Specialty Co. has been incorporated with $10,000 capital by D. K. Bowie and E. Brinkman.

RICHMOND, VA.—Luitweiler Cam Pump Co. has let a contract to the Truscon Steel Co., Youngstown, O., for a 1-story plant 60x250 feet. (Noted Aug. 27.)

HOQUIAM, WASH.—Bids will be asked shortly for a steel bascule type bridge over the little Hoquiam river to replace a wooden structure which recently collapsed. A fund of $36,000 has been provided.

SPOKANE, WASH.—Construction of an 8-story addition to the Home Telephone & Telegraph Co. building, at a cost of $250,000, will be begun in September and finished by Dec. 1 according to present plans. S. G. Morin of this city has the general contract. The building will be of steel frame, brick and terra cotta construction.

HUNTINGTON, W. VA.—Perfected Metal Window Co. has given a contract to the Fulton Iron Works, Huntington, for two 1-story unit additions for the manufacture of steel sash.

MILWAUKEE—Industrial Controller Co., C. G. Welch president, 886 Greenbush street, plans an addition of two or three stories.

MILWAUKEE—A. O. Smith Corp., Keefe and Twenty-seventh streets, is in the market for two 50-ton traveling cranes and also spot welders.

RACINE, WIS.—Lakeside Malleable Casting Co., M. H. Olborn secretary, Clark and Twenty-third street, is building a pattern shop and shipping room, one story, 85 x 300 feet. Nelson & Co., 408 Robinson building, Milwaukee, has general contract.

Business in Canada

FALSE CREEK, B. C.—The plant recently completed here for the National Canners, Ltd., was damaged by fire with a loss of $250,000. Owners will rebuild.

NEW WESTMINSTER, B. C.—The William Gorman Co., Montreal, Que., is having plans prepared by the company's engineer for a paper mill here to cost $150,000.

NORTH VANCOUVER, B. C.—The Vancouver Oil Refinery Co. has started work on the first unit of oil refinery here to cost $40,000.

BELLE RIVER, ONT.—A. W. Connor & Co., Toronto, Ont., engineers, are preparing plans for waterworks plant to be erected here at a cost of $50,000.

FORD, ONT.—The Dominion Forge & Stamping Co. has awarded general contract to Wells & Gray, 1198 Mercer street, for power house to be operated in connection with its plant.

HARRISON, ONT.—The Harrison Stove Co. Ltd. will build a 3-story, brick and cement addition to its plant here to cost $10,000, at the corner of William and Margaret streets, opposite the present plant.

NIAGARA FALLS, ONT.—The Burgess Battery Co. is building a manufacturing plant here.

TORONTO, ONT.—S. R. Hughes Planing Co., 81 Portland street, was damaged by fire Aug. 18, with loss to building and equipment of $20,000. Owners will rebuild and equipment will be required.

WELLAND, ONT.—The following contracts have been awarded in connection with waterworks plant to be erected here: Filtration equipment, Francis Hankin & Co., Ltd., Toronto, Ont., $46,000; pumping equipment, Turbine Equipment Co., Toronto, $55,000; wash water tanks, Horton Steel Works, Bridgeburg, Ont., $8,975; The W. H. Yates Construction Co., Ltd., Hamilton, are general contractors and Willis Chipman, Mail building toronto, engineers.

CHUTE-A-CARON, QUE.—Permission has been granted to the Chute-a-Caron Development Co. to operate in the province of Quebec, and it is reported construction work will be started immediately on a power plant here in connection with plant for the Aluminum Co. of Canada Ltd.

CHUTE-A-CARON, QUE.—The Dominion Bridge Co., Ltd., will supply structural steel for manufacturing plant, power development and residences to be built here for the Aluminum Co. of Canada, a subsidiary of the Aluminum Co. of America. Geo. C. W. Low, care of Price Bros.

LIMOILOU, QUE.—The Canadian Pulp & Paper association will start work in the early future on the erection of a large new mill here.

MONTREAL, QUE.—The International Paint Co. Ltd. will build factory here to cost $45,000 and has awarded general contract to Bremner Norris, Ltd., 65 McGill College avenue, Montreal.

New Trade Publications

FOUNDRY EQUIPMENT—A catalog that also is a reference book on foundry equipment has been circulated by the Hill & Griffith Co., Cincinnati. It covers everything from a cupola to the smallest supply item.

PERMANENT MOLDS—Aluminum castings from permanent molds are illustrated in a bulletin by the Permold Co., Cleveland, which presents also the advantages to be derived from this process.

FIBER ROOF COATING—An application of asbestos to roof repair and covering is described in a bulletin by the Carey Co., Cleveland. Ease of application and complete covering of defects are given as recommendations of the material.

STEAM SPECIALTIES—Water columns and gages, gage cocks, electric alarms and two-whistle valves for use on boilers are given full description and illustration in a catalog by the Reliance Gauge Column Co. Cleveland. The catalog is unusually complete in description, illustration and data.

STEAM PURIFIER—A reprint of a paper on the removal of water and physical impurities from steam leaving a boiler is being circulated by the Andrews-Bradshaw Co., Pittsburgh. It deals with the physical side of steam production for power purposes which the author belives is less thoroughly understood than the chemical.

ENDLESS BELTS—L. H. Gilmer Co., Philadelphia, manufacturer of endless belts, has issued a booklet on that subject, giving engineering data on small belt drives, discussion of belt speeds, ratio of pulley diameter to belt thickness, pulley flanges and other details. This fills a need in providing information on small belts which have not been treated in works on belts in general.

TRACTORS—Caterpillar Tractor Co., San Leandro, Calif., is sending out a bulletin reprinted from a coast banking paper under the caption "Girdling the Globe with Tractors," which presents the facts of the formation of this company from the C. L. Best Tractor Co. and the Holt Mfg. Co. A broadside accompanying it gives data on various types of tractors produced by the company.

FOUNDRY EQUIPMENT—A substantial binder cover in embossed leather, holding catalog sections covering various products, brought up to date, is being put out by the Whiting Corp., Harvey, Ill. The catalog sections are loose-leaf and can be replaced by later issues. A thumb index aids quick reference. The catalog covers, all types of cranes, cupolas, ladles, tumbling mills, core ovens and equipment, trucks and trolleys, air hoists and elevators, side blow steel converters and brass foundry equipment.

TOOL STEEL—A handbook on tool steel written without technicalities, understandable by the layman, is being issued by the special steel department of Joseph T. Ryerson & Son Inc., Chicago. The reader is taken through the various features of special steels and initiated into the details of treating and handling them for best results, without going into the technical features. After this has been completed the remaining pages are devoted to description of the special steels sold by this company and their adaptability to various uses, and illustrations of various steps in production and treatment of tool steel.

MANSFIELD METAL FURNITURE SHEETS

are used as basic material for their products by many of the largest manufacturers of Metal Bedroom Furniture. *Remarkable quality* accounts for this preference by buyers whose specifications are unusually exacting.

Scientific treatment of the metal in the open hearth furnace and the Mansfield Method of bottom-pouring, are responsible for exceptional uniformity in quality and excellent finish of Mansfield Steel Sheets.

Mansfield Sheet & Tin Plate Company

Mansfield, Ohio

12-237 General Motors Bldg., Detroit, Mich.
1372 Wrigley Bldg., Chicago, Ill.
410 Pierce Bldg., St. Louis, Mo.
1106 National City Bldg., New York, N. Y.
2002 Union Trust Bldg., Cleveland, Ohio
1504 West Venango Street, Philadelphia, Pa.

District Sales Offices

1403 Merchants Bank Bldg., Indianapolis, Ind.
1020 Union Trust Bldg., Cincinnati, Ohio
640 Endicott Bldg., St. Paul, Minn.
237 Rialto Bldg., San Francisco, Calif.
509 Wilcox Bldg., Los Angeles, Calif.
1426 L. C. Smith Bldg., Seattle, Wash.

Iron and Steel Production

Compiled by IRON TRADE REVIEW

Pig Iron

	—Stacks— No.	In	——Output—— Total	Av.Daily
1907				
January	376	311	2,174,801	70,155
February	374	308	2,047,036	73,109
March	377	304	2,186,709	70,539
April	378	327	2,226,708	74,223
May	391	329	2,291,030	73,904
June	392	341	2,237,420	74,580
July	396	335	2,253,243	72,685
August	397	329	2,243,656	72,376
September	399	329	2,174,148	72,471
October	401	314	2,359,690	76,119
November	398	226	1,820,558	60,685
December	398	154	1,234,733	39,830
Total	.....	.....	25,249,732	*69,177
1908				
January	398	139	1,081,813	34,897
February	401	150	1,086,809	37,476
March	398	154	1,229,856	39,672
April	398	146	1,155,122	38,504
May	396	145	1,168,002	37,677
June	395	154	1,106,300	36,876
July	397	166	1,228,604	39,632
August	399	181	1,366,019	44,065
September	399	189	1,416,252	47,208
October	400	200	1,573,824	50,764
November	402	212	1,582,314	52,744
December	403	221	1,723,664	55,602
Total	.....	.....	15,718,579	*42,947
1909				
January	406	234	1,787,473	57,683
February	407	233	1,682,470	60,088
March	406	229	1,822,024	58,793
April	406	224	1,731,406	57,687
May	407	236	1,866,757	60,218
June	408	240	1,929,929	64,334
July	409	258	2,088,620	67,375
August	412	278	2,232,642	72,021
September	413	297	2,378,655	79,201
October	413	309	2,589,681	83,538
November	414	311	2,532,740	84,425
December	416	314	2,682,702	86,539
Total	.....	.....	25,325,099	*69,383
1910				
January	416	311	2,599,995	83,871
February	417	311	2,429,525	86,768
March	417	310	2,588,736	83,508
April	418	291	2,477,700	82,590
May	419	279	2,374,802	76,607
June	420	271	2,288,279	76,276
July	420	254	2,158,124	69,617
August	422	244	2,103,791	67,864
September	420	234	2,048,461	68,282
October	421	230	2,086,205	67,297
November	421	218	1,910,385	63,679
December	421	193	1,779,899	57,416
Total	.....	.....	26,845,902	*73,550
1911				
January	421	210	1,766,658	56,985
February	421	226	1,781,285	63,617
March	421	236	2,165,764	69,863
April	421	220	2,044,904	68,163
May	421	206	1,871,388	60,367
June	421	202	1,773,282	59,109
July	423	196	1,776,108	57,294
August	423	206	1,921,832	61,995
September	423	216	1,973,918	65,797
October	421	214	2,092,061	67,486
November	421	214	1,999,100	66,637
December	422	215	2,032,301	65,558
Total	.....	.....	23,198,601	*63,558
1912				
January	421	227	2,052,806	66,220
February	422	235	2,098,796	72,372
March	420	237	2,411,529	77,791
April	421	239	2,377,621	79,254
May	423	243	2,503,341	80,753
June	424	242	2,433,737	81,125
July	422	245	2,402,567	77,502
August	423	255	2,500,163	80,650
September	419	262	2,444,454	81,482
October	422	280	2,683,645	86,569
November	423	289	2,639,562	87,985
December	423	291	2,777,292	89,590
Total	.....	.....	29,325,513	*80,124
1913				
January	423	297	2,787,800	89,929
February	423	306	2,578,670	92,095
March	423	278	2,762,823	89,123
April	421	297	2,754,353	91,812
May	421	285	2,816,825	90,865
June	422	283	2,616,883	87,229
July	422	264	2,558,275	82,525
August	424	260	2,537,018	81,839
September	425	258	2,494,098	83,137
October	425	244	2,539,924	81,933
November	424	225	2,229,960	74,322
December	424	191	1,976,138	63,746
Total	.....	.....	30,652,767	*83,980
1914				
January	423	199	1,879,336	60,624
February	423	219	1,888,607	67,450
March	423	232	2,341,551	75,534
April	422	212	2,261,501	75,383
May	422	198	2,097,019	67,646
June	422	193	1,904,566	63,486
July	422	187	1,955,324	63,075
August	422	187	1,996,483	64,403
September	422	180	1,882,718	62,757
October	422	162	1,767,227	57,007
November	421	150	1,501,269	50,042
December	421	154	1,495,325	48,236
Total	.....	.....	22,970,926	*62,934
1915				
January	421	165	1,591,024	51,323
February	421	179	1,666,592	59,521
March	421	190	2,046,280	66,009
April	421	197	2,114,518	70,484
May	421	207	2,255,157	72,747
June	421	221	2,369,932	78,998
July	421	234	2,563,311	82,687
August	421	246	2,774,825	89,510
September	420	266	2,834,342	94,478
October	420	276	3,120,340	100,656
November	421	285	3,035,235	101,174
December	421	295	3,201,605	103,278
Total	.....	.....	29,573,161	*81,022
1916				
January	421	304	3,171,878	102,319
February	421	312	3,078,548	106,157
March	422	315	3,327,630	107,343
April	422	320	3,225,496	107,517
May	423	321	3,364,584	108,535
June	423	325	3,213,818	107,127
July	419	316	3,221,127	103,907
August	419	317	3,197,838	103,156
September	419	326	3,208,041	106,935
October	419	328	3,508,180	113,167
November	420	322	3,317,805	110,593
December	422	309	3,184,178	102,715
Total	.....	.....	39,019,123	*106,609
1917				
January	422	310	3,159,839	101,930
February	422	317	2,649,935	94,641
March	423	331	3,255,813	105,026
April	425	333	3,328,061	110,936
May	425	340	3,413,677	110,119
June	427	347	3,260,234	108,675
July	429	351	3,337,442	107,659
August	431	357	3,238,970	104,483
September	431	342	3,140,742	104,691
October	433	354	3,296,286	106,332
November	434	344	3,198,597	106,620
December	435	321	2,885,380	93,077
Total	.....	.....	38,164,976	*104,561
1918				
January	435	294	2,403,227	77,523
February	435	319	2,318,242	82,723
March	438	338	3,209,996	103,548
April	437	351	3,273,355	109,112
May	437	360	3,451,884	111,351
June	437	353	3,316,148	110,538
July	437	364	3,408,584	109,954
August	439	371	3,378,479	108,983
September	438	364	3,413,223	113,774
October	437	364	3,482,392	112,335
November	437	360	3,347,844	111,595
December	435	351	3,434,114	110,778
Total	.....	.....	38,437,488	*105,308
1919				
January	435	330	3,306,279	106,654
February	435	311	2,943,347	105,120
March	435	279	3,088,023	99,614
April	435	216	2,474,374	82,479
May	433	197	2,107,729	67,991
June	433	199	2,114,028	70,467
July	434	240	2,424,212	78,200
August	432	266	2,742,081	88,453
September	433	163	2,480,790	82,692
October	432	216	1,864,424	60,142
November	432	252	2,407,369	80,244
December	432	262	2,626,074	84,711
Total	.....	.....	30,578,730	*83,777
1920				
January	432	285	3,012,373	97,172
February	432	305	2,984,257	102,904
March	433	315	3,375,768	108,895
April	433	278	2,752,670	91,754
May	433	297	2,991,825	96,510
June	433	302	3,046,623	101,553
July	434	291	3,043,918	98,190
August	434	306	3,145,536	101,468
September	434	317	3,124,308	104,143
October	435	290	3,288,341	106,075
November	435	255	2,935,081	97,836
December	435	202	2,700,268	87,105
Total	.....	.....	36,400,968	*99,456

*Average.

	—Stacks— No.	In	——Output—— Total	Av.daily
1921				
January	436	184	2,414,753	77,895
February	436	155	1,929,394	68,906
March	436	103	1,594,866	51,447
April	436	96	1,190,751	39,691
May	436	90	1,215,272	39,202
June	436	74	1,064,007	35,466
July	435	69	864,642	27,892
August	436	69	954,901	30,802
September	435	84	985,795	32,859
October	435	95	1,234,450	39,821
November	429	120	1,414,958	47,165
December	429	123	1,642,775	52,992
Total	.....	.....	16,506,564	*45,223
1922				
January	430	127	1,645,804	53,090
February	429	139	1,630,180	58,220
March	429	155	2,035,908	65,674
April	429	161	2,070,161	69,005
May	427	175	2,309,348	74,495
June	427	191	2,362,455	78,748
July	427	170	2,403,030	77,517
August	427	143	1,810,665	58,408
September	427	189	2,024,008	67,466
October	428	218	2,629,655	84,827
November	428	241	2,846,110	94,870
December	428	253	3,083,520	99,468
Total	.....	.....	26,850,844	*73,563
1923				
January	428	261	3,228,226	104,136
February	424	278	2,993,918	106,925
March	424	295	3,523,595	113,664
April	423	311	3,547,012	118,233
May	423	322	3,868,486	124,790
June	424	322	3,667,868	122,262
July	418	299	3,684,677	118,860
August	418	270	3,448,886	111,254
September	418	254	3,117,526	103,917
October	418	245	3,142,642	101,375
November	418	229	2,891,191	96,373
December	418	231	2,912,527	93,952
Total	.....	.....	40,025,850	*109,659
1924				
January	414	248	3,015,480	97,273
February	414	263	3,073,619	105,987
March	410	269	3,465,389	111,787
April	410	234	3,226,107	107,537
May	411	187	2,619,986	84,515
June	411	158	2,022,836	67,427
July	411	145	1,783,457	57,531
August	411	150	1,882,986	60,741
September	411	174	2,053,617	68,454
October	411	182	2,461,727	79,410
November	411	204	2,514,979	83,832
December	411	229	2,956,389	95,367
Total	.....	.....	31,076,572	*84,908
1925				
January	411	251	3,372,207	108,781
February	411	256	3,214,067	114,788
March	410	246	3,571,422	115,207
April	409	221	3,211,235	107,041
May	405	196	2,933,907	94,642
June	401	191	2,679,045	89,301
July	396	188	2,664,953	85,966

Ingots and Castings

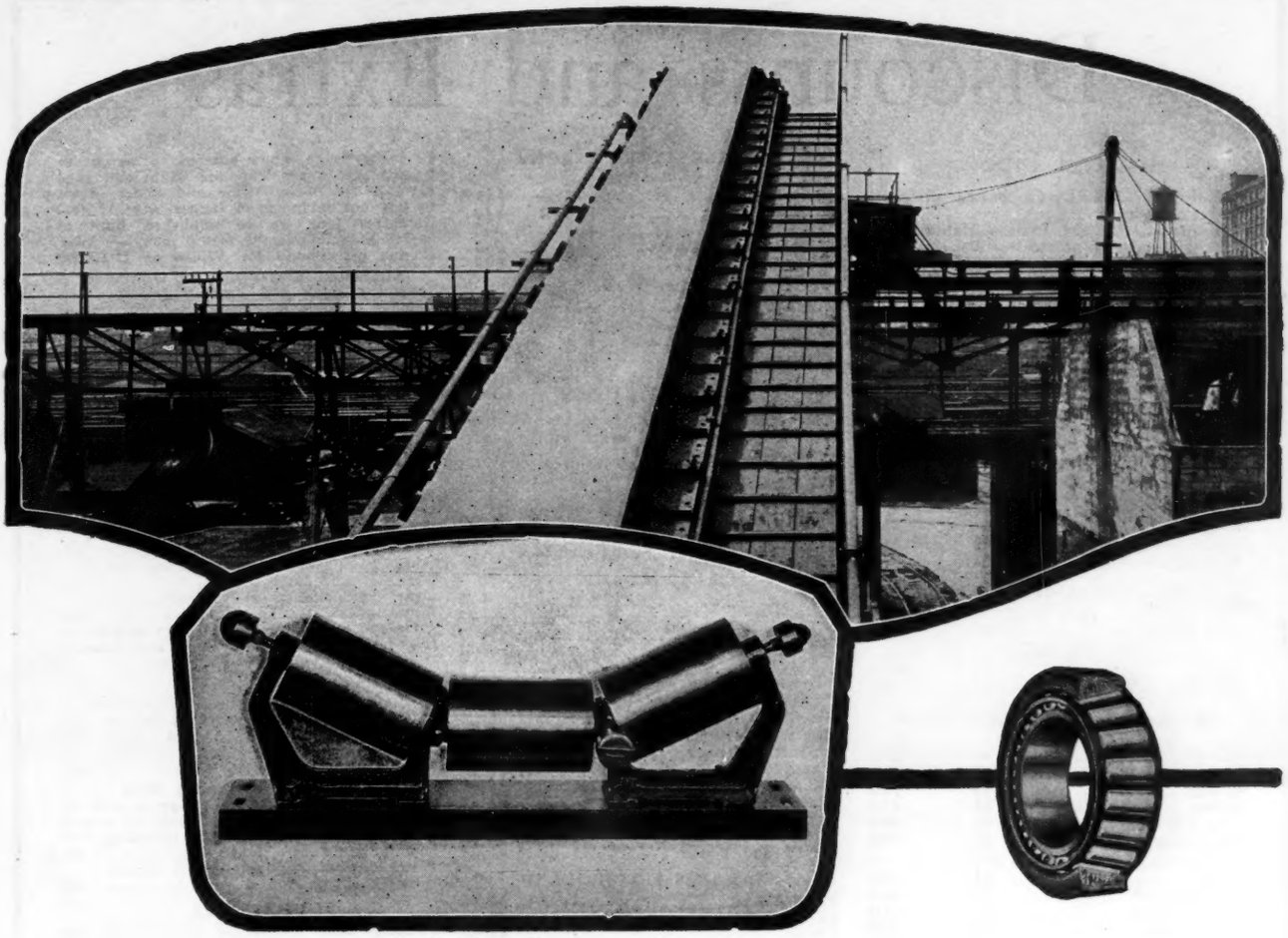
By American Iron and Steel Institute

By American Iron and Steel Institute.....	Ingots	Castings	Total
1922	34,568,418	1,034,508	35,602,926
1923	43,485,665	1,458,031	44,943,696
1924	36,811,157	1,120,782	37,931,939

Monthly Ingot Output

Gross Tons

1924	94.43 per cent of capacity	Calculated total
January	3,964,704	4,198,564
February	3,547,020	3,756,243
March	3,964,662	4,198,520
April	3,387,699	3,587,524
May	3,265,628	3,458,253
June	3,028,423	3,207,056
July	2,915,611	3,087,590



Good Materials Help Make Good Idlers

Good materials are as necessary in building good conveyor idlers as good workmanship and design. For without good materials the value of good workmanship and design is lost. That's why Brownhoist has spent almost as much time in selecting the materials for the Brownhoist conveyor idler as in designing the idler itself.

Perfect and permanent alignment made possible through a patented one-piece bracket, Timken roller bearings, steel channel mountings—these are but three reasons why Brownhoist belt conveyors are meeting with ever increasing popularity wherever conveyors are used.

Send for a copy of Catalog M which shows all the features of Brownhoist belt conveyors in detail. This book also contains valuable engineering data for any one considering a belt conveyor installation.

The Brown Hoisting Machinery Co., *Cleveland, O.*

Branch Offices: New York, Chicago, Pittsburgh, San Francisco, New Orleans, London, Eng.

BROWNHOIST

GOOD MATERIAL HANDLING MACHINERY

Discounts and Extras

Steel Pipe

Pittsburgh and Lorain basing discounts, jobber's carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount or $4 per ton higher net.

Chicago takes differential 2½ points less than Pittsburgh-Lorain basis or $5 per ton higher net.

	Black	Galvanized
Butt Weld		
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	46	42½
¾-inch	60	48½
1 to 3 -inch	62	50½
Lap Weld		
2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½
REAMED AND DRIFTED		
Butt Weld		
1 to 3-inch	60	48½
Lap Weld		
2-inch	53	41½
2½ to 6-inch	57	45½
EXTRA STRONG—PLAIN ENDS		
Butt Weld		
⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½
Lap Weld		
2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½
DOUBLE EXTRA STRONG		
Butt Weld		
½-inch	42	32½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½
Lap Weld		
2-inch	41	32½
2½ to 4-inch	43	34½
4½ to 6-inch	42	33½
7 to 8-inch	38	25½

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis

THREADS AND COUPLINGS		
Butt Weld		
¼ and ⅜-inch	+11	+39
½-inch	22	2
¾-inch	28	11
1 to 1½-inch	30	13
Lap Weld		
1¼ and 1½-inch	Upon application	
2-inch	23	7
2½ to 6-inch	26	11
3 to 6-inch	28	13
7 to 12-inch	26	11
PLUGGED AND REAMED		
Two points less than above		
EXTRA STRONG, PLAIN ENDS		
Butt Weld		
¼ and ⅜-inch	+19	+34
½-inch	21	7
¾-inch	28	12
1 to 1½-inch	30	14
Lap Weld		
2-inch	23	9
2½ to 4-inch	29	13
4½ to 6-inch	28	14
7 to 8-inch	21	7
8 to 12-inch	16	2

DOUBLE EXTRA STRONG		
Butt Weld		
½-inch	+47½	+59½
⅝-inch	+28	+40
1-inch	+34	+40
1¼-inch	+28	+40
1½-inch	+27	+39
Lap Weld		
2 and 2½ inches	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	

Boiler Tubes

	Carload
Pittsburgh less carload discounts. 4 points larger	
STEEL (Lap Welded)	
2 and 2¼-inch	23 off
2½ and 2¾-inch	33 off
3-inch	36 off
3¼ to 3¾-inch	38½ off
4 to 13-inch	42 off
CHARCOAL IRON	
1½-inch	+22
1¾-inch	+12
2 and 2¼-inch	+ 2
2½ to 3-inch	3
3¼ to 4½-inch	5
SEAMLESS COLD DRAWN	
1-inch	56 off
1¼ and 1½-inch	48 off
1¾-inch	32 off
2 and 2¼-inch	27 off
2½ and 2¾-inch	35 off
3-inch	41 off
3¼ and 3½-inch	43 off
4-inch	46 off
4½, 5 and 6-inch	41 off
SEAMLESS HOT ROLLED	
2 and 2¼-inch	30 off
2½ and 2¾-inch	38 off
3-inch	44 off
3¼ and 3½-inch	46 off
4-inch	49 off
4½,5 and 6-inch	44 off

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add $8 per net ton for more than four gages heavier than standard and add 10 per cent to theoretical weight.

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts on New List July 1, 1925

Carbon, 0.10 to 0.20 per cent	55 off
Carbon, 0.30 to 0.40 per cent	50 off

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Outside diameter	Gage	Net prices per foot f.o.b. Pittsburgh Price
2-inch	12-gage	14¼c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11-gage	17c
2½-inch	10-gage	18c
3-inch	7-gage	33c
5¼-inch	9-gage	50c
5½-inch	9-gage	52c

Plus usual extras for forming and for long lengths.

Plate Extras

BASE

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, dated Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge, (except for ¼ inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inches long up to published limit in length but not over 80 feet 0 inch, are base

Extras per Pound for Width or Diameter

All Plates, Rectangular or Otherwise

¼-inch thick and heavier, but not less than 11 pounds per square feet, if ordered to weight—

Over 100 inches to and including 110 inches	.05c
Over 110 inches to and including 115 inches	.10c
Over 115 inches to and including 120 inches	.15c
Over 120 inches to and including 125 inches	.25c
Over 125 inches to and including 128 inches	.50c
Plates less than ¼-inch or lighter than 11 pounds per square foot.	
Over 72 inches to and including 84 inches	.10c
Over 84 inches to and including 96 inches	.20c
Over 96 inches to and including 100 inches	.30c

Over 100 inches add .35c to width extras for plates ¼ inch thick and heavier.

GAGE

Plates not Exceeding 72 inches Wide

Plates less than ¼-inch gage, to and including ¼-inch; or lighter than 10.2 pounds per square foot to and including 7.65 pounds per square foot ..... .20c

Plates Over 72 inches Wide

Plates less than ¼-inch gage to and including ¼-inch; or lighter than 11 pounds per square foot, to but not including 7.65 pounds per square foot ..... .20c

Plates ordered 7.65 pounds per square foot ..... .30c

QUALITIES

Pressing steel	.10c
Flange steel (boiler grade)	.15c
Ordinary firebox steel	.20c
Stillbottom steel	.30c
Locomotive firebox steel	.50c
Marine steel	1.50c
Hull material subject to U. S. Navy Dept. Specifications for Medium or Soft Steel	.10c
High tensile hull steel subject to U. S. Navy Dept., or equivalent specifications	1.00c
Boiler steel subject to U. S. Navy Dept Specifications, classes A and B	1.50c
Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel.	

Floor Plates

Checkered plates 1.75c

Checkered plates are not furnished to sketch and are rolled from "Stock Steel" only. No physical tests will be made on checkered plates.

INSPECTION

Mill inspection .....No extra

Charges for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

CUTTING

LENGTH or DIAMETER

All Plates, Rectangular or Otherwise

Five feet and over up to published limit of length, but not over 80 feet..No extras

Under 5 feet to 3 feet inclusive	.10c
Under 3 feet to 2 feet inclusive	.25c
Under 2 feet to 1 foot inclusive	.50c
Under 1 foot	1.55c
Over 80 feet to 100 feet inclusive	.25c

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

Regular Sketches

With not more than four straight cuts. (including straight taper plates)

Additional extra ..... .10c

Irregular Sketches

With not more than four straight cuts. (Sketches cannot be sheared with re entrant angles)

Additional extra ..... .20c